

U. S. Fish and Wildlife Service

# Valentine

*National Wildlife Refuge*

*Draft Comprehensive  
Conservation Plan and  
Environmental Assessment*

# Valentine National Wildlife Refuge

## Draft Comprehensive Conservation Plan and Environmental Assessment

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Prepared by  
U.S. Fish and Wildlife Service  
Ft. Niobrara/Valentine NWR Complex  
HC14, Box 67  
Valentine, NE 69201

and

U.S. Fish and Wildlife Service  
Land Acquisition and Refuge Planning  
P.O. Box 25486, DFC  
Denver, CO 80215

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## Summary

The 71,000-acre Valentine National Wildlife Refuge is located in the Sandhills of north central Nebraska. The native grass prairie and wetlands found here support a diversity of wildlife. Little has changed from historic times. The Refuge was established by Congress in 1935 “as a breeding ground for migratory birds and other wildlife.” The Refuge is home to 270 species of birds, 59 species of mammals, and 22 species of reptiles and amphibians. Several threatened and endangered plants, birds, and one insect are found here. The 180-acre Holt Creek and 480-acre Yellowthroat Wildlife Management Wildlife Management Areas in Keya Paha and Brown Counties are also included in this Plan.

Comprehensive conservation planning is being done for the Refuge and Wildlife Management Areas to guide management for the next 10- to 15-year period. When completed, the Plan will provide clear goals and objectives, implementation strategies, and recommended staffing and funding for the areas. The Plan will also meet the planning requirement in the National Wildlife Refuge Improvement Act of 1997.

This Draft Comprehensive Management Plan (CCP) considered four alternatives for management of Valentine National Wildlife Refuge. Alternatives considered were Current Management Alternative, Historical Alternative, Intensive Wildlife Management Alternative, and Modified Historical Alternative (Preferred Alternative).

The Current Management Alternative would continue managing the Refuge as it is presently done. Grazing, using permittee cattle, rest, and limited prescribed fire, would be used to manage grasslands. Limited surveys and management for endangered species would take place. Exotic plants and weeds would be controlled using grazing, fire, beneficial insects, and herbicides. Public use would continue with hunting, fishing on the same number of lakes, and wildlife observation allowed. Cooperation and partnerships in place would continue. Present monitoring of wildlife and habitat would take place.

The Historical Alternative would manage Refuge grasslands and wildlife to replicate conditions that existed before settlement. A herd of 500 bison would be introduced to the Refuge. Permittee cattle would be removed over time. Prescribed fire would be increasingly used to replicate naturally occurring fire frequency. Water control structures would be removed and lakes returned to natural levels. Endangered species would be monitored and studied to determine effects of historic management. Exotic plants would be controlled using increased prescribed fire along with beneficial insects and herbicides. Prairie dog towns would be established. Current hunting programs would continue and a bison hunt initiated. The number of lakes open to fishing would increase, but water levels would not be managed for sport fish. A concession would be sought to access the bison herd and increased interpretation of historical ecology emphasized. Current cooperation and partnerships would continue and additional partnerships in bison management sought out. Monitoring of the bison herd as well as fire effects and wildlife trends would increase.

*Several of the alternatives for management of Valentine National Wildlife Refuge call for the return of bison to Refuge grasslands; Native grasses growing on Refuge meadows provide excellent nesting habitat for ducks, prairie chickens, and birds which prefer tall dense cover; The endangered plant, blowout penstemon, grows in the sandy dunes where wind erosion creates areas of open sand; Money from the sale of Duck Stamps was used to purchase most of the lands that now make up Valentine National Wildlife Refuge; in April prairie chicken males display on traditional breeding grounds throughout the Refuge.*





The Intensive Wildlife Management Alternative would actively manage habitats and Refuge programs to increase outputs in certain areas. Grazing with permittee cattle and Texas longhorns from Ft. Niobrara NWR, rest, and increased use of fire would be used to actively manage grasslands. Water control structures would remain in place and active water level management, including drawdowns, used. Increased monitoring, management, and research on endangered and threatened species would occur. Prairie dog towns would be established. Weeds and exotic plants would be controlled using increased prescribed fire along with grazing, beneficial insects, and herbicides. Current Refuge hunting programs would continue with limits on numbers of hunters instituted if crowding develops. The number of Refuge lakes open to sport fishing will be reduced but management of those open increased for sport fish. Interpretation and environmental education will be increased and the Refuge headquarters moved to a location along Highway 83. Current cooperation and partnerships will continue and additional ones sought. Land trades and acquisition from willing sellers will be pursued. Monitoring of wildlife and habitats would increase.

The Modified Historical Alternative was selected as the preferred alternative. This alternative was selected based on an analysis of the environmental consequences and the desire to return the historical forces of bison grazing and fire to grassland management. To start, the southwest portion of the Refuge will be fenced for bison and a herd placed there. Prescribed fire will be increased in this area and interior fences incrementally removed. This area will be monitored over a five-year period to document changes in grasslands and wildlife. After evaluation, the decision will be made to extend this type of management over the entire Refuge or to return to using permittee cattle as the primary grassland management tool. Refuge lakes presently open to fishing will remain open with water control structures, water level, and other management used to benefit sport fish. Old drainage ditches will be plugged. Endangered species use will be monitored and applied research conducted to determine methods to increase use. Blowout penstemon will be transplanted in additional sites and trees protected for bald eagle roosts. An attempt will be made to establish prairie dog towns. Weeds and exotic plants will be controlled using a combination of prescribed fire, beneficial insects, and herbicides. Current hunting and fishing opportunities will continue. Increased emphasis would be placed on environmental education and interpretation and the Refuge headquarters site moved to a location near Highway 83. Current cooperation and partnerships would continue. Outside funding would be sought to implement parts of the Plan. A partnering effort in bison management may be sought. Land trades and acquisition with willing sellers will be pursued to straighten Refuge boundaries. Trading Holt Creek Wildlife Management Area for portions of Rat, Beaver, and Willow Lakes will be pursued with Nebraska Game and Parks Commission. Monitoring of grasslands and wildlife will increase with emphasis on evaluation of the use of bison and fire to manage grasslands.

## Purpose of and Need for Action

### Purpose of and Need for Comprehensive Conservation Plan

The U.S. Fish and Wildlife Service has recognized the need for strategic planning for the field stations of its National Wildlife Refuge System (System). The System now has more than 513 refuges totaling more than 93 million acres. In September 1996, Executive Order 12996 was enacted which gave the System guidance on issues of compatibility and public uses of its land. Congress passed the National Wildlife Refuge System Improvement Act (Act) in October 1997. This "organic act," for the first time in the System's history, required that Comprehensive Conservation Plans (CCP) be prepared for all refuges within 15 years.

The Service was an active participant in this historic legislation and supported the planning requirement. The planning effort will help each station, and thus the entire System, to meet the changing needs of wildlife species and the public. The planning effort provides the opportunity to meet with our neighbors, our customers, and other agencies to ensure that plans are relevant and truly address natural resource issues and public interests. It is our goal to have the System be an active and vital part of the United States' conservation efforts. This Draft CCP/ Environmental Assessment (EA) discusses the planning process, Valentine National Wildlife Refuge's (NWR) characteristics, and the direction management will take in the next 15 years. It is provided to give the reader a clear understanding of the purposes of the Refuge, the alternatives considered, and the preferred alternative.

### Planning Process, Planning Time Frame, and Future Revisions

Valentine NWR is located 20 miles south of Valentine, Nebraska, along Highway 83 (see Figure 1). The Refuge is administered as part of the Fort Niobrara-Valentine NWR Complex with the main office located five miles east of the city of Valentine. The Hackberry Headquarters on Valentine NWR is located along State Spur 16B.

Comprehensive conservation planning efforts for Valentine NWR began in January 1997 with a meeting of regional management and planning staff and field station employees at Fort Niobrara NWR. At that meeting a core planning team was designated with the major responsibilities of gathering information and writing the plan. A review team was set up to provide guidance and direction to the core planning team. A working group was also organized to provide interchange of information between Service personnel, outside agencies, and interested stakeholders of the Refuge.

On March 20, 1997, an open house scoping session was held in the Cherry County Hall meeting room, Valentine, Nebraska. The open house provided participants an opportunity to learn about the Refuge's purposes, mission, and goals, and issues currently facing management. People attending were provided the chance to speak with Service representatives and to share their comments.

A two-day tour was held with the working group and Service management and planning staffs in April 1997. The tour gave participants an opportunity to view fenced animal management and prominent wildlife species of the Refuge, discuss management aspects of the Refuge, and give planning staff ideas for consideration in the planning process.

During the planning process, the review and working groups have had access to information on objectives and alternatives being considered. Written comments have been exchanged and verbal conversations have been held. This Draft CCP/EA is the first opportunity that these groups and the public have had to review the entire planning effort and the Plan. A 60-day comment period is provided.

The CCP will guide management on the Refuge for the next 15 years. Plans are ultimately signed by the Regional Director, Region 6, thus providing Regional direction to the station project leader. A copy of the Plan will be provided to all those interested. The project leader of the station will review the Plan every five years to decide if it needs revision.

## Step-Down Management Plans

The Service has traditionally used a Refuge Manual to guide field station management actions. The policy direction given through the Manual has provided for a variety of plans used to prepare annual work schedules, budgets, land management actions including prescribed fire, grazing, haying, sale of excess animals, monitoring, public use, safety, and other aspects of public land management. The CCP is intended as a broad umbrella plan that provides general concepts, specific wildlife and habitat objectives, endangered species, public use, and partnership objectives. Depending on the Refuge needs, these may be very detailed or quite broad. The purpose of step-down management plans is to provide greater detail to managers to implement specific actions authorized by the CCP.

Under this Plan, the Valentine NWR will revise its current wildlife and habitat monitoring plan. An overall Habitat Management Plan will be prepared to guide all aspects of habitat management to include but not limited to the following: annual grazing by large animal herds, the use of prescribed fire, prairie dog reintroduction, and rest and undisturbed cover required by migratory waterfowl and native birds. A cultural resource protection and interpretation plan will be prepared. The Service will also prepare a site plan for relocation of the headquarters along Highway 83 and other associated facilities.

## National Wildlife Refuge System Mission and Goals

The Mission of the System is, "To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." Goals of the System are aimed at fulfilling this mission. Some major goals are to provide for specific classes of wildlife species for which the Federal government is ultimately responsible. These "trust resources" are threatened and endangered species, migratory birds, and anadromous fish. Most refuges provide breeding, migration, or wintering habitat for these species. Nearly all refuges also supply habitat for big game species and resident or nonmigratory wildlife as well.

Individual refuges provide specific requirements for the preservation of trust resources. For example, waterfowl breeding refuges in South and North Dakota provide important wetland and grassland habitats to support populations of waterfowl as required by the Migratory Bird Treaty Act and the North American Waterfowl Management Plan. Valentine NWR also supports breeding populations as well as providing migration habitat during spring and fall periods. Sabine NWR, and other refuges in Louisiana and Texas provide wintering habitat for these populations. The network of lands is critical to these birds' survivals; any deficiency in one location will affect the species and the entire networks ability to maintain adequate populations.

Other refuges may provide habitat for endangered plants or animals that exist in unique habitats found only in very few locations. Refuges in these situations ensure that populations are protected and habitat is suitable for their use. Refuges, by providing a broad network of lands throughout the United States, help to prevent species from being listed by providing secure habitat for their use and opportunities for recovery.

Under the National Wildlife Refuge System Improvement Act of 1997, six wildlife-dependent recreational uses are recognized as priority public uses of refuge lands. These are wildlife observation and photography, environmental education and interpretation, fishing and hunting. These and other uses are allowed on refuges after finding that they are compatible with the purpose of the refuge. Uses are allowed through a special regulation process, individual special use permits, and sometimes through normal state fishing and hunting regulations.

## Figure 1 - Vicinity Map



## Valentine National Wildlife Refuge History

Valentine NWR was established on August 14, 1935 by Executive Order No. 7142 "as a breeding ground for migratory birds and other wildlife." Lands for the Refuge were purchased from private ranches, recreational land, resort clubs, and corporations with investment interests. Funding for acquisition came from the Emergency Conservation Fund of 1933. The dust bowl period of the 1930's created concern among conservationists for the survival of waterfowl species. Many refuges were set aside during this period to help in meeting the goals of the Migratory Bird Treaty Act of 1918. Since the 1940's, additional lands have been purchased and traded to straighten Refuge boundaries and improve Refuge administration. In 1992, the Fort Niobrara-Valentine Refuge Complex acquired the Yellowthroat Wildlife Management Area, a 920-acre fee title/easement area in Brown County, and in 1995 the 180 acre fee title Holt Creek Wildlife Management Area in Keya Paha County, through the U.S. Department of Agriculture (USDA), Farmers Home Administration, under provisions of the 1990 Farm Bill.

A Civilian Conservation Corps (CCC) Camp of 200 enrollees was established on Valentine NWR in 1935 and was operational until 1939. The CCC enrollees constructed fences, roads, buildings, fire towers, planted trees and shrubs, developed ponds and water control structures, and built a diversion ditch from Gordon Creek. Nebraska Game and Parks Commission (NG&PC) acquired a water right for the Gordon Creek Diversion. In the early 1980's, this water right was relinquished for lack of use and also because it was not in the best interest of the Refuge. Surface water management has been facilitated by subsequent construction of seven water control structures and records of lake elevations are available since the 1950's.

The Refuge was opened to fishing when water returned to the lakes following the drought of the 1930's. The Refuge was opened for the following hunting seasons: deer in 1964, pheasant and grouse in 1965, waterfowl in 1977, dove in 1983, and coyotes in 1986.

From 1935 through 1972, Valentine NWR was managed by an on-site refuge manager in charge of only Valentine NWR. In 1973, the Refuge was joined with Fort Niobrara NWR to form a Complex with one manager in charge.

## Wetland Management History

Thirty-seven major wetland areas exist on Valentine NWR comprised of approximately 13,000 acres of semipermanent and permanent wetlands which historically have operated as a closed system except for periods of high precipitation. Historic data regarding surface and groundwater elevations are available for Valentine NWR; however, the most consistent data records available are since 1985.

Since establishment of Valentine NWR, various attempts have been made to manage the water elevations of six lakes by water control structures. However, water elevations are dependent upon precipitation. Since 1981, above average annual precipitation has complicated attempts of managing lake elevations beyond diminishing the adverse effects of the extremely high wetland levels experienced since the mid-1980's. (See Table 1)

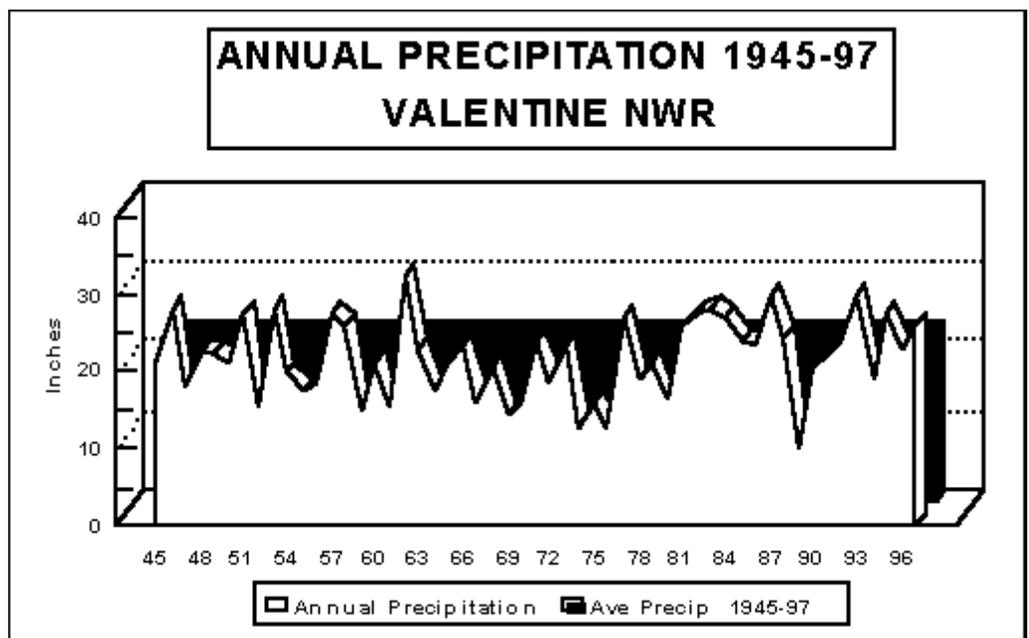


Table 1

Approximately 40 U.S. Geological Survey (USGS) wells have been established on and adjacent to Valentine NWR in which groundwater elevations have been monitored by Refuge staff since the 1950's. This information is part of the monitoring program carried out by USGS Water Resources Division. Groundwater elevations are presently 4-7 feet above the elevations recorded during the period 1950 to 1985.

## Gordon Creek Diversion

In the 1930's, the CCC's constructed a diversion on Gordon Creek to divert water through Valentine NWR. Considerable resources were allocated to the construction of the diversion dam and ditch to Hackberry Lake. However, the project was "piecemealed" beyond Hackberry Lake through the remainder of Valentine NWR (Dewey, Clear, and Willow Lakes) and north through Trout and Big Alkali Lakes via Slagel Creek and east through Ballard Marsh and Red Deer Lake via East Plum Creek.

In 1952, a District Court Decree (Young, Harse and Harms vs State of Nebraska) successfully challenged the construction of a larger water control structure on Willow Lake by Nebraska Game and Parks Commission; set a maximum elevation that water could be held in Willow Lake; and the defendants were "*permanently restrained and enjoined from causing or permitting any interference ... and from by any act or in any manner causing or contributing to causing the water in the natural water course below and to the north of the outlet of Willow Lake to flow in any different manner or at any different time or season of the year than in the manner and at times and seasons in which they are wont to flow.*" In 1997, the Willow Lake water control structure washed out and Nebraska Game and Parks Commission has elected not to replace the structure and to allow water levels in Willow Lake to fluctuate naturally.

The water right for the Gordon Creek Diversion was acquired by the Nebraska Game and Parks Commission, but the water right was relinquished in the early 1980's because it was not of benefit to the management of Valentine NWR. This diversion was the original source of carp infestation for Valentine NWR. Wetland management subsequent to the construction of the diversion has focused on controlling carp populations and the adverse effects of carp on habitat and food resources of waterfowl and sport fish. Over the years, water control structures were constructed and reconstructed in an attempt to prevent the movement of carp. However, by the 1940's, carp had spread throughout the wetlands in the northwest area of Valentine NWR as well as the downstream wetlands under the management of NG&PC and private landowners. Various attempts to control carp with chemical treatment were carried out in the 1950's and 1960's to control carp populations on Valentine NWR. The most effective control technique was initiated in 1975 and, during the period 1975-82, seven lakes were mechanically pumped and chemically treated with rotenone to reduce the carp populations. To date, only two of the renovated lakes have remained carp-free. However, in the remaining five lakes, carp populations have remained at moderate levels with the implementation of biological control. Biological control was accomplished by modifying northern pike size limits to enhance the populations of larger northern pike and subsequently reduce carp recruitment.

## Grassland Management History

Livestock grazing has occurred on Valentine NWR since establishment. However, the level of grazing dramatically increased during the early 1950's, and by the early 1960's, annual grazing use exceeded 50,000 animal unit months (AUM). Virtually the entire Refuge grassland acreage was grazed or hayed. The two Natural Research Areas, totaling 1,381 acres, were not grazed. This level of grazing had a negative impact on wildlife and vegetation on the Refuge.

In 1971, a grassland management study team was formed to look into the situation and recommend appropriate corrective actions. The major management recommendations of the team were:

1. Zone all meadows based on their value for nesting waterfowl.
2. Stop annual mowing of meadows.
3. Improve native plant vigor and composition by prescribed burning, mowing and grazing with alternating periods of rest.
4. Maintain nesting cover by providing 40- to 100-acre undisturbed blocks for three to eight years.
5. Hold units in reserve through normal attrition of permittees to allow for flexible and intensive manipulation.
6. Initiate restoration of native vegetation on priority meadows beginning in 1972.
7. Develop small food plots (i.e., "weed patches") to promote greater diversity and abundance of wildlife species.
8. Stop season-long grazing and promote restoration and maintenance of range condition by use of rest, fall-deferment, deferred-rotation and rest-rotation systems.
9. Establish wilderness area - remove grazing facilities and possibly employ summer grazing.
10. Initiate adequate monitoring techniques to evaluate qualitative and quantitative changes in vegetation and response by wildlife.

Recommendations of the team have generally been implemented except that the wilderness proposal has not received Congressional approval; mowing has been reduced by approximately 85 percent; and maintaining cover in undisturbed condition, for periods of three to eight years, has annually involved less than 20 percent of the total grassland acreage of Valentine NWR.

In 1986, rotational grazing was phased out and short-duration grazing initiated. Use allowed by permittees was retained but as permittees dropped out of the program, they were not replaced. Between 1986 and 1997, permittees went from 13 to 9 and use from approximately 9,000 to 6,000 AUMs.

## Wildlife Management History

Wildlife populations have been affected by both the management of wetland and grassland resources on Valentine NWR. Grazing practices increased as a result of increased demand for beef during World War II and remained in excess of 50,000 AUMs until the mid-1960's. Indigenous wildlife species with specific habitat requirements (which are not achieved under the widespread grazing/mowing regimes of that time) did not fare very well. By the mid-1950's, considerable criticism was leveled against the management of Valentine NWR both from within and outside the Service. In the early 1970's, a grassland management

team was formed to develop recommendations regarding the management of Refuge grasslands. Wildlife populations, for which monitoring data are available, have responded positively to the spirit and intent of these recommendations; specifically, the enhancement of native Sandhill Prairie through the termination of widespread, season-long grazing, annual mowing practices, and the implementation of planned grassland management treatments (See Table 2). These provide optimum acreage of vegetative composition, structure, and undisturbed nesting cover for wildlife.

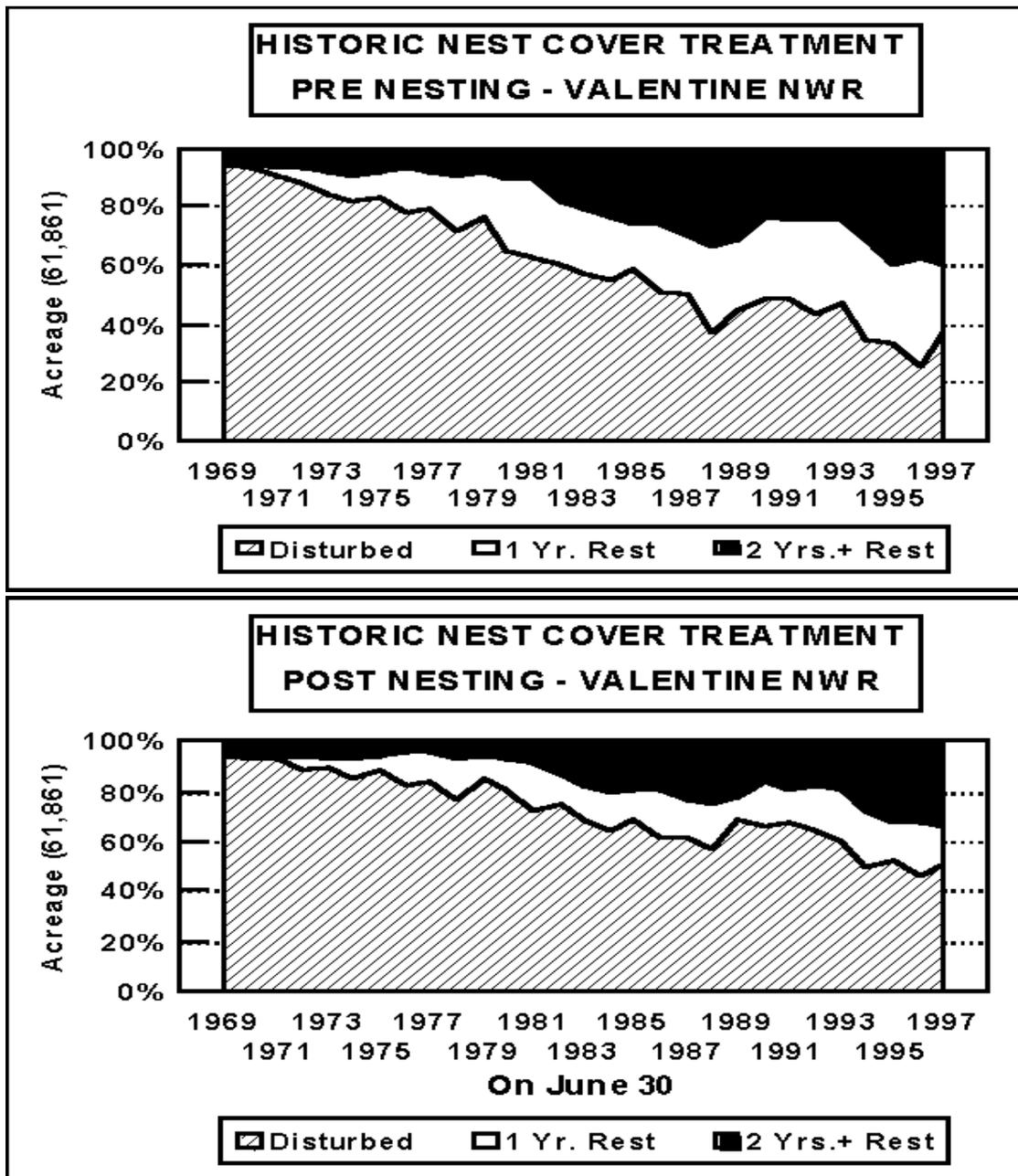


Table 2

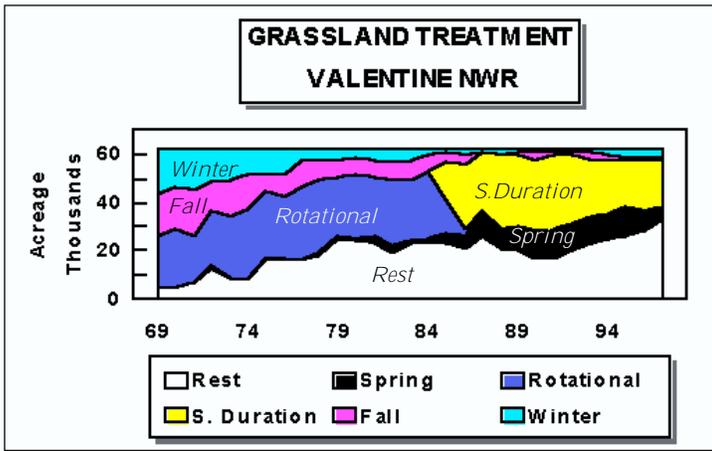


Table 3

The annual acreage of undisturbed cover for upland nesting birds increased from less than 5 percent in 1969 to greater than 50 percent by 1985 (See Table 3). The increase in undisturbed nesting cover acreage has resulted in greater productivity and population levels particularly for upland nesting waterfowl. Specifically, a significant improvement has occurred in the hatching chronology of blue-winged teal and mallards with the increased acreage of undisturbed cover. The earlier hatching peaks since 1978 have ultimately resulted in greater recruitment rates (See Table 4) and subsequently greater breeding populations and composition of dabbling ducks. In particular, mallard breeding pairs have increased dramatically with the increased acreage of cover that received rest treatment for two or more growing seasons, and this increase occurred during a period of extremely low continental duck breeding populations.

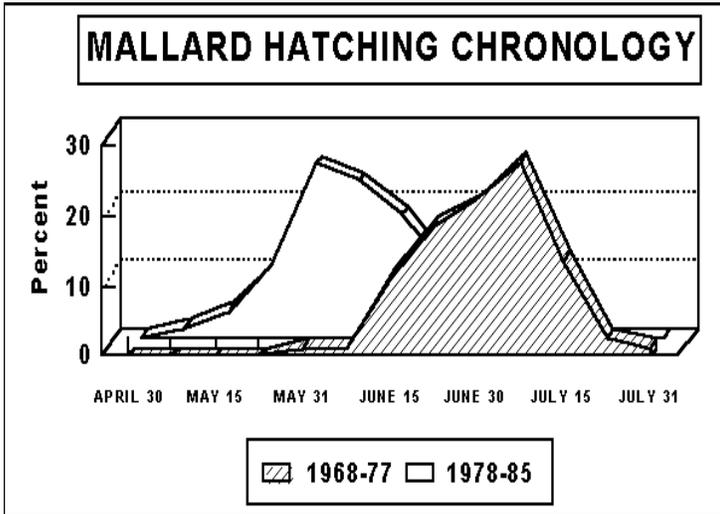
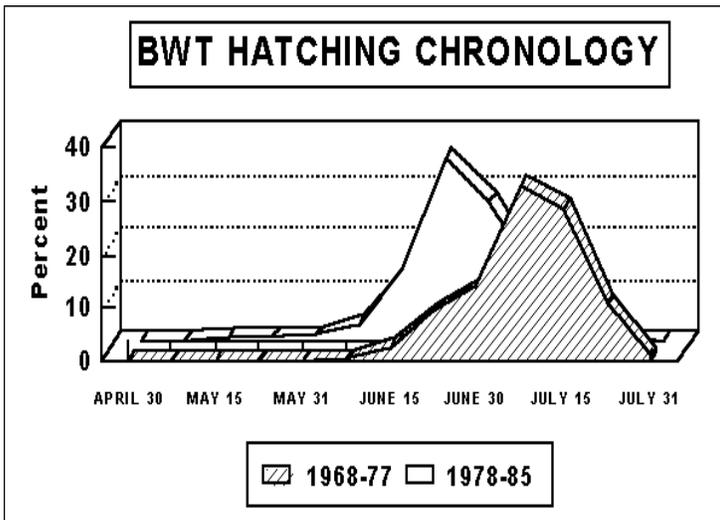


Table 4

The greater prairie chicken is an “indicator species” of the health and vigor of native grasslands and is a reflection of the management of native grasslands. In the 1930’s, 21 refuges existed with breeding populations of greater prairie chickens and, by 1963, the only remaining breeding populations existed on Ft. Niobrara-Valentine NWRs. Since the 1980’s, a considerable effort has been put forth within the Ft. Niobrara-Valentine NWR Complex to increase the health, vigor, and residual cover amounts of native grasslands for upland nesting birds by controlling the timing of grazing and rest treatments. Statistical analysis indicates that a significant inverse relationship exists between the level of AUM utilization and the breeding population of prairie chickens on Valentine NWR (See Table 5). Additionally, Hughes and McDaniel (unpublished 1998) developed linear regression models for Valentine NWR to determine relationships between cover treatment and the number of male prairie chickens surveyed during the period 1969-1996. The best fit model indicated an inverse significant relationship between the percentage of disturbed cover throughout the year prior to the breeding population survey period; indicating the importance of undisturbed cover for prairie chickens throughout the year for nesting, brood rearing, and winter survival.

Other wildlife have undoubtedly benefitted from the enhancement of Sandhill Prairie; however, specific surveys have not been carried out to document changes in the numerous species present on Valentine NWR.

## Valentine National Wildlife Refuge Purpose and Vision

### Refuge Purpose

The Valentine NWR was established by Executive Order No. 7142, August 14, 1935, “. . . reserved and set apart . . . as a refuge and breeding ground for migratory birds and other wildlife.”

### Refuge Vision Statement

Preserve, restore, and enhance the ecological integrity of Nebraska Sandhill uplands and associated wetlands as habitat for migratory birds and other indigenous wildlife for the benefit of present and future generations.

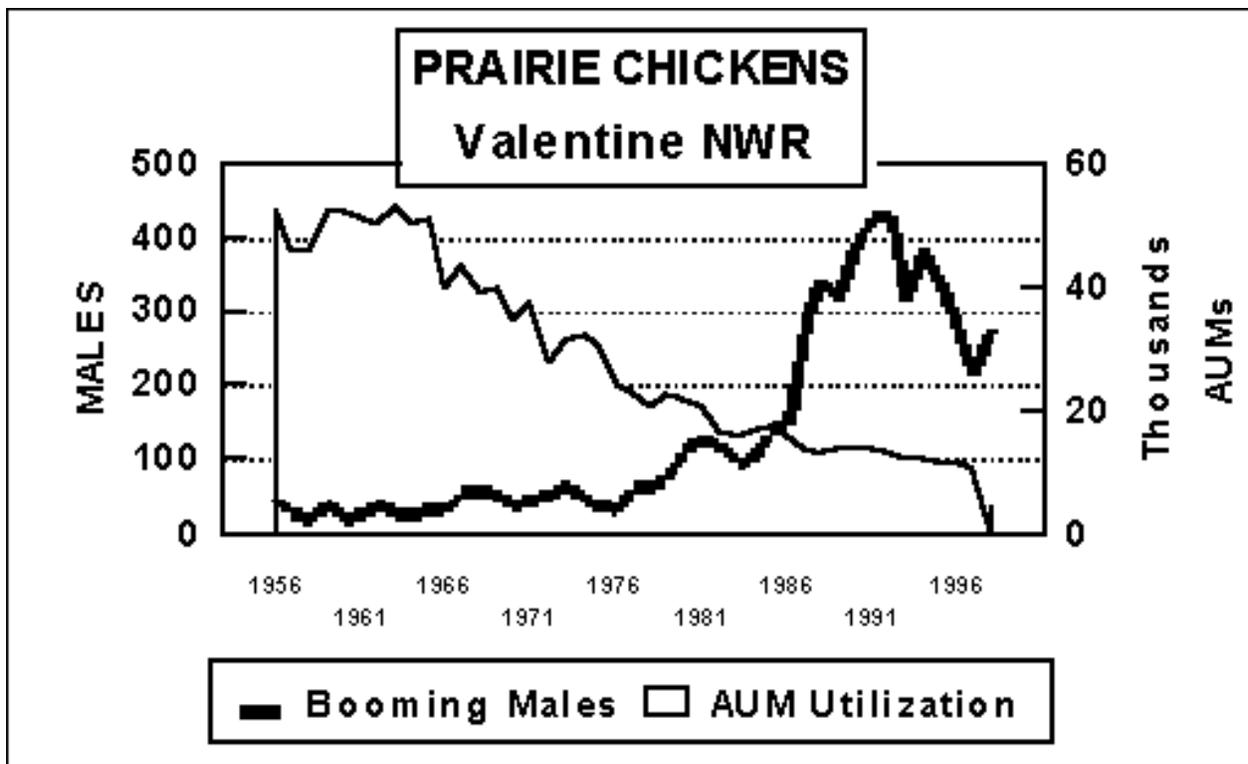


Table 5

## Refuge Goals and Objectives

The Refuge planning team spent considerable time defining habitat and other objectives to further describe management actions needed to meet Refuge goals. They are presented here to provide a logical step-down from the broad purpose and vision statements to concrete management decisions. They are also useful in this document as a comparison with the following section on Alternatives. Ideally, each alternative should meet all these objectives, in practice some meet them more fully than others. The preferred alternative described in this CCP represents a course of action felt to meet them best.

## Interrelationships of Goals and Objectives

The subsequent presentation of Refuge goals and objectives are presented separately for ease of understanding and reference. They are however, not independent of each other. The goals and objectives, and the resources and activities discussed are completely interrelated in spatial, ecological, and management considerations.

The habitat goals and objectives are the primary criteria that refuge managers will use to guide their efforts and evaluate progress toward accomplishing this CCP. Goals and objectives for wildlife, endangered and threatened species, interpretation and recreation, and ecosystem provide additional information for managers to refine specific actions and to help in evaluating success of habitat management and use of the Refuge by the public. In order for refuge managers to achieve the purpose and vision of the Refuge fully, these objectives need to be understood holistically and applied in combination, each being a critical part of the Refuge vision.

## Habitat Management

Goal: Preserve, restore, and enhance the ecological diversity of indigenous flora of the physiographic region described as Sandhill Prairie within the Northern Great Plains.

### **Grassland Habitat [Composition] Objective:**

Preserve, restore, and enhance the diverse native floral communities so that greater than 75 percent is composed of climax species (good to excellent range condition). The following are the indicator species and composition of the desired floral community by range site (USDA Range Handbook and Potential Natural Vegetation of Nebraska - Kaul and Rolfsmeier, 1993)

P **Wetland Range:** Eighty percent grasses (bluejoint and northern reedgrass, inland saltgrass, prairie cordgrass and foxtail barley); 15 percent grasslike plants (sedges and rushes); 5 percent forbs (saw-toothed sunflower, marsh hedge-nettle, Indian hemp dogbane, swamp milkweed, arrowhead and smartweeds).

P **Sub-irrigated Range:** Seventy-five to 85 percent grasses (switchgrass, big bluestem, Indian grass, Scribner's panicum, prairie cord grass, inland saltgrass and purple lovegrass); 5-10 percent grasslike plants (sedges and rushes); 5-10 percent forbs (American licorice, blue verbena, purple prairie clover, stiff sunflower, nodding lady's-tresses, western ironweed, milkweeds, goldenrods, closed and downy gentians, blue lobelia, and the threatened western prairie fringed orchid); 5 percent shrubs (leadplant, willow, poison ivy, western snowberry, Arkansas and Wood's wild rose).

P **Sand Range:** Eighty to 95 percent grasses (switchgrass, sand bluestem, little bluestem, big bluestem, Indian grass, prairie sandreed, needle-and-thread, porcupine grass, sand love grass, Canada wildrye, Scribner's panicum, western wheatgrass, prairie June grass); less than 5 percent grasslike plants (sedges); 10 percent forbs (blue verbena, bush morning glory, cudweed sagewort, blazing star, penstemons (shell-leaf, narrow beardtongue), western ragweed, bracket spiderwort, Rocky Mountain bee plant, evening primrose, prairie coneflower, silky and purple prairie clovers, gilia, ten-petal mentzelia, sunflowers, goldenrods, vetches, scurfpeas, yucca and pricklypear cactus); less than 5 percent shrubs (Arkansas and wild rose, leadplant, green sage, poison ivy, sand cherry, wild plum, chokecherry and western snowberry).

P **Choppy Sands Range:** Eighty-five percent grasses (prairie sandreed, little bluestem, sand bluestem, blowout grass, needle-and-thread, prairie June grass, sand dropseed, sand love grass, spiny muhly, switchgrass, and blue grama); less than 5 percent grasslike plants (thread-leaf sedge); less than 10 percent forbs (bush morning glory, painted milkvetch, bracted spiderwort, western ragweed, cudweed sagewort, sunflowers, scurfpeas, yucca, pricklypear cactus and the endangered blowout penstemon); less than 5 percent shrubs (Arkansas and wild rose, green sage, poison ivy, sand cherry, wild plum, chokecherry and western snowberry).

**Grassland Cover [Structure] Objective:**

Annually provide diverse vegetation composition and structure with greater than 50 percent (30,930 acres) of the total grassland (61,861 acres) remaining in undisturbed cover (i.e., vegetative cover that has not been disturbed by grazing, mowing or fire during the preceding growing season through July 10 of the current year) to meet nesting, brooding, feeding and protective cover requirements of various grassland dependent wildlife species. The following combinations of cover treatment and vegetative structure are recommended for meadow and hill acreages:

Cover Treatment	Acreage (%)	VOR Ave. (Range) *
Meadow (13,106 Ac.)		
Disturbed cover	~ 5,200 (~ 40%)	~ 3.0" (1-10")
1 Year Rest	~ 2,600 (~ 20%)	~ 10.0" (2-20")
2 Years+ Rest	~ 5,200 (~ 40%)	~ 12.0" (4-24")
Hills (48,755 Ac.)		
Disturbed cover	~ 21,900 (~ 45%)	< 3.0" (1-10")
1 Year Rest	~ 12,200 (~ 25%)	= > 6.0" (1-16")
2 Years+ Rest	~ 14,600 (~ 30%)	= > 6.0" (1-18")

\* - Visual Obstruction Readings averages are residual cover readings taken in the Fall(before the upcoming nesting season).

**Wetland Habitat Objectives:**

P Groundwater Resources: Maintain a database on Refuge groundwater resources to ensure long-term protection of Refuge groundwater quantity and quality.

P Surface Water Resources: Maintain a database on Refuge surface water resources by documenting wetland elevations for long-term protection of Refuge water supplies.

P Maximize production of invertebrate (protein) and plant (carbohydrate) resources on 11,181 wetland acres to provide an appropriate food base for indigenous wildlife (migratory birds, mammals, reptiles, amphibians, fish) and enhance production on 2,650 acres of lakes for sport fishing.

P Maximize food production for migratory birds by providing an unexploited food base on the following acreage of wetlands that are not designated for sport fishing:

Wetland Class	Acreage
Temporary	735
Seasonal	1,094
Semipermanent	4,636
Lakes	4,716
Total Acreage	11,181

P Enhance food production by periodic drawdowns/renovations on the following Lakes designated for sport fishing:

Wetland	Acreage
Clear	532
Dewey	494
Duck and Rice	118
Hackberry	528
Pelican	617
Watts	173
West Long	76
Willow (Refuge)	112
Total	2,650

P Maintain Dewey Marsh Fen and identify and maintain other fen sites which have unique vegetation and hydrology.

**Indigenous Trees, Brush, and Planted Tree Habitat Objectives:**

Enhance the Sandhill Prairie landscape by reducing invading cedar trees while still maintaining a representative interspersed of indigenous woody vegetation per the following specific objectives.

**Site specific indigenous woody vegetation recommended targets:**

P Maintain indigenous woody vegetation of the north facing slopes next to the south shorelines of Clear, Dewey, Hackberry, Pelican, Whitewater, Dad's and South Marsh Lakes.

P Maintain indigenous willow tree and brush on the northwest-west ends of Dewey, Hackberry and Pelican Lakes and around Duck Lake.

P Maintain indigenous trees in and adjacent to the Headquarters and Sub-headquarters areas.

**Recommended maximum target level of composition by habitat unit:**

P Willow occurrence and invasion on meadows and around lakes (less than 10 percent).

P Cedar occurrence and invasion on meadows (less than 5 percent) and in the Sandhills (less than 5 percent).

P Reduce cottonwood invasion in the northern King Flat area.

P Maintain the two relic stands of quaking aspen at the west end of Watts Lake Habitat Unit (H.U. 1A) and the north side of Dewey Marsh (H.U. 3B)

**Exotic Plant Species Objective:**

Prevent additional exotic plant species from becoming established and reduce the occurrence, frequency and stand density of existing exotic species to less than 5 percent of composition within five years.

- |                   |                        |
|-------------------|------------------------|
| Russian olive     | Black and honey locust |
| Siberian elm      | Mulberry               |
| Smooth brome      | Quack grass            |
| Reed canary grass | Leafy spurge           |
| Canada thistle    | Kentucky bluegrass     |

**Wildlife**

Goal: Preserve, restore and enhance the ecological diversity and abundance of migratory birds and other indigenous wildlife with emphasis on waterfowl, prairie grouse, and other grassland dependent birds.

Discussion: The following wildlife objectives are based upon unpublished Refuge data, and represent average population levels that can normally be expected to occur given the above habitat objectives. Periodic severe weather events, continental changes in migratory bird populations, and other factors can, and do, cause fluctuations in Refuge populations.

**Migratory Waterfowl Objectives:**

P Achieve an average annual breeding pair density of equal to or greater than 4,000 dabbling and 700 diving ducks with a brood/pair ratio expressed as a percent of equal to or greater than 20 percent over a five year period (unpublished Refuge data 1978-91). A brood/pair ratio is the percent of pairs that produce a brood to flight stage.

P Maintain an annual breeding population of approximately 100 Canada goose pairs.

P Provide approximately 11,000 acres of wetland for spring and fall migrating waterfowl.

P Trumpeter swans: Cooperate with Lacreek NWR by reporting all trumpeter swan production and winter activity observed on and adjacent to Valentine NWR. Generally one and periodically two breeding pairs of swans are present on Valentine NWR.

**Other Migratory Bird Objectives:**

P Maintain and increase breeding populations of indigenous, neotropical migrants that are water-based including American bittern, white-faced ibis, black tern, marbled godwit, northern harrier and other shorebirds and wading birds that inhabit the Refuge. Establish average densities of appropriate species and an overall species richness/diversity index to document baseline levels and to determine subsequent population trends.

P Maintain and increase breeding populations of land-based species of management concern such as upland sandpiper, long-billed curlew, short-eared owl, barn owl, grasshopper sparrow, dickcissel, eastern phoebe, eastern kingbird, loggerhead shrike, and eastern meadowlark (Bogan, 1995). Establish average densities of selected species and an overall species richness/diversity index to document baseline levels and to determine subsequent population trends.

P Maintain and increase breeding populations of colonial nesting species (western and eared grebes, Forster's and black terns, cormorants and black-crowned night herons).

P Evaluate reintroduction of breeding populations of sandhill cranes to the Nebraska Sandhills and specifically Valentine NWR.

**Prairie Grouse (Prairie Chicken and Sharp-tailed Grouse) Objectives:**

P Maintain a five-year average density of equal to or greater than one prairie grouse lek per 1.6 sq. mi. (28 total leks including 15 prairie chicken and 13 sharp-tailed grouse) within the area designated as the State Survey Block. The Survey is a portion of the Refuge surveyed each year as one part of a statewide survey of prairie chicken and sharp-tailed grouse.

P Maintain annually a minimum of 35 prairie chicken leks (2.8 sq. mi. / lek) throughout Valentine NWR.

P Annually achieve a minimum target sample of 350 prairie grouse wings from the Volunteer Prairie Grouse Hunter Harvest Survey. Achieve a harvest ratio of equal to or greater than 2.5 juveniles per adult. The harvest ratio measures current year nesting success and health of the population by comparing the number of young in the fall population to the number of adults. Ratios greater than or equal to 2.5 indicate a healthy population.

**Other Indigenous Wildlife Species Objective:**

P Ensure the diversity and abundance of indigenous mammals, reptiles, amphibians, fish, and invertebrates remain intact. Establish average densities of key indicator species to document baseline levels and to determine subsequent population trends.

**Introduced/Exotic Species Objective:**

P Prevent the establishment of additional introduced species and refrain from carrying out management activities specifically to encourage population expansion of existing introductions (pheasants).

P Reduce carp population densities in Refuge lakes.

**Sport Fishery Objective:**

P Maintain sustainable and harvestable populations of sport fish in the nine designated sport fishing lakes.

## Threatened and Endangered Species

Goal: Contribute to the preservation and restoration of endangered and threatened flora and fauna that occur or have historically occurred around Valentine NWR.

### **Threatened and Endangered Plant Objectives:**

P Maintain approximately 72 acres of blowouts, with potential for the endangered blowout penstemon, on the Refuge. In a minimum of five blowouts, establish and maintain populations of 100 penstemon plants per blowout. Currently the Refuge has an estimated 72 acres of blowouts in at least a dozen locations. Three habitat units exist with very small natural populations of penstemon and three additional habitat units with nine blowouts that have had plants transplanted into them. The blowout penstemon recovery plan has an objective of maintaining ten population groups with 300 plants in each group. The Refuge, if successful in increasing its populations to the objective, would satisfy approximately 16 percent of the endangered penstemon recovery goal.

P Maintain and manage a meadow habitat with potential for western prairie-fringed orchids (2,000 acres) insuring an average annual population of 300 individuals in at least four locations. Currently the Refuge has an estimated population of approximately 300 plants in five known locations. Western prairie-fringed orchids have been observed on private land at four other sites adjacent to the Refuge. The Refuge currently manages meadows with orchids so that plants can flower and set seed.

### **Threatened and Endangered Wildlife Species Objectives:**

P Monitor and document migration use by whooping cranes, piping plover, least terns, and peregrine falcons. Record habitats used, areas used, and durations of stay. Keep use areas free from human disturbance while individuals are present. Use by these species is so seldom that no habitat management objective or population objectives can be stated. Monitoring, documenting use, and keeping them undisturbed may at some time provide insights into ways to help these populations.

P Monitor and document use by American burying beetles.

P Maintain large hackberry, cottonwood, and willow trees around Refuge lakes as roost sites for migrating and wintering bald eagles. Monitor and document eagles use of habitat, roost trees, and eagle mortality. Monitoring will help in describing key locations and trees, and in documenting eagle mortality, a problem in past years. Some of these wintering locations could become nesting areas as eagle populations expand.

### **Species of Management Concern Objective:**

P Maintain self sustaining populations of Blanding's and yellow mud turtles. Develop and implement strategies to reduce mortality from vehicles.

## Interpretation and Recreation

Goal: Provide the public with quality opportunities to learn about and enjoy Sandhill Prairie, fish, wildlife, and history of the Refuge in a largely natural setting and in a manner compatible with the purposes for which the Refuge was established.

### **Interpretation, Wildlife Observation and Photography, and Environmental Education Objective:**

P Provide visitors with quality interpretation, environmental education, wildlife observation and photography opportunities.

### **Fishing Objective:**

P Provide year-round fishing opportunities for warm water fish in designated lakes in a largely natural setting. Watts Lake has handicap accessibility.

### **Hunting Objective:**

P Provide quality hunting opportunities for waterfowl, deer, prairie grouse, pheasants, dove, and coyote on portions of the Refuge. Limited controlled hunting opportunities for elk will be available if elk are reintroduced to the Refuge.

### **Cultural Resource Objective:**

P Conduct a cultural resource inventory and provide protection for and interpretation of Refuge historical and prehistoric resources.

## Ecosystem (Partner)

Goal: Promote partnerships to preserve, restore, and enhance a diverse, healthy, and a productive ecosystem of which the Fort Niobrara and Valentine NWR's are part.

### **Ecosystem Objectives/Strategies for the Fort Niobrara/Valentine NWR Complex:**

P Support the National Scenic River and Niobrara River Council to meet desired future conditions of the Niobrara Scenic River.

P Support the Sandhills Management Plan through Partners for Wildlife Program for the enhancement of wetlands, riparian, and surrounding grassland habitats on private lands.

P Support uses of refuges as research areas for all legitimate natural resource subjects. In consultation with the Division of Endangered Species, conduct applied management research relating to management of endangered plant populations.

P Conduct baseline monitoring for contaminants on the Valentine NWR, Fort Niobrara NWR and the Niobrara River to identify changes in contaminant concentrations relative to baseline concentrations already established.

P Develop an effective outreach program that results in two wildlife habitat/public use projects completed annually with non-governmental organizations.

P Develop greater inter-agency cooperation resulting in completion of at least two cooperative projects with state and local agencies annually that materially benefit area wildlife resources.

P Use the CCP document to help in marketing Refuge needs. Through grant writing and networking with other entities, accumulate outside revenue and other sources to help in meeting Refuge objectives.

## Alternatives, Including the Proposed Action

Six alternatives were considered to guide the management of Valentine NWR in the future.

Four alternatives for the management of Valentine NWR were considered in detail and are described here and summarized in Appendix A. The alternatives considered were Current Management (No Action), Historical, Intensive Wildlife Management, and Modified Historical (Preferred).

Two alternatives, a maximization of economic uses and placing the Refuge in custodial status, were briefly considered but discarded because they are inconsistent with the National Wildlife Refuge System Improvement Act of 1997, purpose of Refuge and mission of the Refuge System.

The following is a discussion of how the remaining four alternatives assist in fulfilling Valentine NWR's goals and objectives as described previously.

## Current Management (No Action) Alternative

### Grassland Management

Cattle grazing, rest, and prescribed fire are used to manage grasslands on the Refuge. The 61,861 acres of grassland on the Refuge are divided into 327 habitat units by barbed wire and electric fences. Of this acreage, 48,755 is in hills and 13,106 in meadows. Plans are made each year to either graze, rest, or prescribe burn grasslands on the Refuge.

In 1997, 34,789 acres (56 percent) of Refuge grasslands were rested. Rested grasslands are those that are not grazed by cattle or burned by prescribed fire. Refuge studies have documented that rested grasslands are preferred nesting cover for waterfowl and grouse. Grassland management is designed to maximize undisturbed cover. Undisturbed cover is grassland that is not grazed, burned by either wild or prescribed fire, or effected by hail for the preceding year's growing season and the current year's nesting season. In 1997, 56 percent of the Refuge grasslands were in undisturbed cover through June 30.

In 1997, a total of 388 acres (less than 1 percent) of grassland in seven habitat units were burned using prescribed fire. Prescribed fire is used to invigorate native grasses, reduce cedar trees in grasslands, and control invader grasses such as brome and Kentucky bluegrass. Prescribed fires are planned and conducted by a fire crew from the Fort Niobrara/Valentine NWR Complex. Wildfires on the Refuge are aggressively suppressed by the same fire crew and local fire departments under cooperative agreements.

Nine permittees held annual permits to graze approximately 6,600 animal use months (AUMs) over the period April 1, 1997 through March 30, 1998. The permittees have held permits for many years and all own land either adjacent to or near the Refuge. Refuge staff plans a grazing program for each permittee to maintain and improve the condition of Refuge grassland for wildlife. Grazing permittees are charged at market rate for use. Improvements and repairs to wells, fences, tanks, and other facilities needed for the program are paid for by the permittees, and the cost deducted from their final bill. In 1997, \$26,759 was spent on improvements and deducted from final billings. Deductions are also made from billings for frequent moves of cattle and grazing treatments that differ from normal ranching practices. In 1997, \$46,203 was collected and deposited in the Refuge Revenue Sharing Account.

The methods and expected results for the different grazing strategies used are explained below.

Spring grazing treatment is done before the end of May on sub-irrigated meadow sites. The cattle are in the unit for more than two weeks. Cattle eat or trample most of the residual cover. They also overgraze and thus reduce undesirable cool season exotic grasses (Kentucky bluegrass and smooth brome). Meadows hayed are also sometimes given this treatment to add fertilizer. Dramatic results occur with this treatment. Exotic cool season grasses are suppressed and native warm seasons (switchgrass and others) increase in vigor and density. The disadvantage is the loss of the unit for nesting in the year of treatment and a lower waterfowl nesting density in the following year. Often the unit can, however, be rested for up to five years following treatment. In 1997, 30 habitat units totaling 6,099 acres (9 percent of grassland) received a spring grazing treatment and included some areas that were later hayed.

Spring short-duration grazing is grazing a unit for less than two weeks during May. Generally the cattle are in the unit for only 3 to 5 days. This type of grazing is limited to hill units to stimulate growth of grasses, especially cool seasons. The short exposure times eliminate overgrazing. In 1997, ten habitat units totaling 3,280 acres (5 percent of grassland) had spring short-duration grazing treatments. Where possible, units grazed later in summer the previous year are grazed using this treatment. This both varies treatment and reduces disturbance to nesting cover. Most units grazed with spring short-duration grazing show excellent growth of native vegetation by fall.

Short-duration summer grazing is done from June 1 through September 1. Cattle are in a unit for less than two weeks. Most units are grazed only 3 to 5 days and the cattle moved onto the next unit. Electric fences are used to break up larger units and increase stock density. Most short-duration summer grazing is completed by mid-July. In 1997, 79 habitat units totaling 19,723 acres (32 percent of grassland) were short-duration summer grazed. Units grazed by this method show good growth by fall if adequate moisture is received. If little or no late summer rainfall is received, regrowth is less, especially in those units grazed in late July or August.

Summer grazing is done from June 1 through September 1 and cattle are in the unit for two weeks or longer. In 1997, no acres were summer grazed. If done, this is in larger units that have not been cross fenced.

Fall grazing is done from September through November. Fall grazing can reduce mulch accumulations and add fertilization. If done at the proper time, cattle will also graze out small wetlands dominated by prairie cordgrass and leave the surrounding upland vegetation alone. Generally the wetlands have green vegetation in them while the uplands have only cured grasses. Grazing in the wetlands recycles nutrients and provides pair habitat for ducks in the spring. Most units that are fall grazed are then given a spring grazing treatment the following year. In 1997, six habitat units totaling 1,446 acres (2 percent of grassland) were fall grazed.

Winter grazing is done from November through April. In winter grazing, cattle are fed hay on a feed ground in a unit. The hay comes from the Refuge. Winter feeding creates dense weed patches for several years following the treatment. These weed patches provide winter food for deer, pheasants, and other resident wildlife. Units with a history of winter grazing combined with feeding also have excellent growth of vegetation. Resident wildlife also uses waste grain from the feeding operation. In 1997, three habitat units totaling 1,167 acres (2 percent of grassland) were winter grazed.

Haying was done on 714 acres (1 percent of grassland) of sand, sub-irrigated, and wetland range sites and yielded 1,520 tons of hay in 1997. Haying is done on a share-basis with three permittees receiving 60 percent and the Refuge receiving 40 percent of the hay harvested. Some hay is also put up on a contract with the cost deducted from permittees grazing bills. Most of the meadows hayed are also grazed either in the fall or spring. This adds fertilization to the meadows and improves the quality and quantity of hay produced. Haying is used to provide browse areas for Canada geese, prairie grouse, and deer, and for winter feed for the Texas Longhorn herd at Fort Niobrara NWR. In some years, part of the Refuge share of hay is used for road repair and maintenance. This was not done in 1997.

## Wetland Management

Most of the lakes, marshes, and wetlands on the Refuge are natural and have no structures for water level management. Drainage ditches put in before the area was a Refuge can still be found in several locations. These ditches are only active in high water periods and are generally not effective in draining the Refuge wetlands.

Several of the nine lakes open to sport fishing have dikes and structures that offer limited water management capabilities. On four lakes, water levels are generally held at a level higher than the natural level to reduce the possibility of a winter kill of sport fish. In normal water years, the Refuge staff releases water from these lakes at such a time as to not impact downstream landowners' haying operations. In recent high water years, water has run continuously from these lakes. These lakes also have fish barriers to keep the carp from migrating between lakes and infesting new waters. The lakes open to sport fishing were pumped and treated with rotenone to kill the carp between 1975 and 1982. Following treatment they were restocked with sport fish and have been managed as sport fisheries. Sport fish are stocked frequently and on occasion moved between lakes.

## Threatened and Endangered Species

Threatened and endangered species recorded on the Refuge are blowout penstemon, western prairie fringed orchid, American burying beetle, bald eagle, peregrine falcon, whooping crane, and least tern. Managing and maintaining prairie habitat by using rest, fire, and grazing will benefit these species.

Surveys for blowout penstemon have been conducted on the Refuge and only several naturally occurring plants found each year. Nine areas of blowout penstemon have been transplanted onto the Refuge during the past three years under a University of Nebraska cooperative program. About 2,000 seedlings per year were raised and transplanted in suitable habitat during 1996 to 1998.

Western prairie fringed orchids are surveyed in July when in bloom. They grow in some areas mowed for hay. In these areas, the plants are marked with stakes so they are not cut. Areas where the orchids grow are not grazed during the flowering season. The Service assists the Task Force for Population Habitat Viability Analysis for the orchid.

American burying beetles have been documented on the Refuge.

Bald eagles are common winter residents on the Refuge. Whooping cranes, least terns, and peregrine falcons are only rarely seen. No special management is conducted. Occasionally in the past, areas of the Refuge were closed to the public when whooping cranes were present on Refuge meadows. This closure would be repeated if whooping cranes use the Refuge during migration.

## Indigenous Wildlife

Wildlife diversity, with the exception of large ungulates and their predators, is relatively unchanged in the Nebraska Sandhills as compared to most areas of the United States. Moreover, since the 1980's the ecological integrity of Sandhill Prairie on Valentine NWR has been enhanced by planned treatments of grazing, prescribed fire, and rest. These planned treatments have resulted in a tremendous improvement in the vigor and composition of native vegetation, natural aesthetics, and simultaneously provided greater amounts of residual vegetation for indigenous grassland wildlife than is available throughout the remainder of the 19,000 square miles of the Nebraska Sandhills.

Long-term monitoring of key indicator species has documented that waterfowl (particularly mallard) and prairie grouse (particularly prairie chicken) populations have benefited from the greater amounts of residual and/or undisturbed vegetative cover. In fact, the Fort Niobrara and Valentine NWR's are the only refuges that have retained historic populations of greater prairie chickens in the System; and in both cases, these populations have increased since the mid-1980's.

Positive effects on other indigenous wildlife species that require greater amounts of vegetative cover undoubtedly exist; however, specific documentation is not available for Valentine NWR.

The Service conducts very limited trapping of mammalian predators and snakes on a nesting island in the Marsh Lakes to benefit nesting waterfowl. The Refuge has a trapping plan targeted to predator control and muskrat disease outbreaks. No trapping by the public took place on the Refuge in 1997.

## Exotic and Invading Species

Prescribed fire, rest, and grazing are the main tools used for controlling exotic and invader plants to maintain healthy prairies. Spring grazing treatments are especially effective in reducing Kentucky bluegrass, the most widespread invader on the Refuge. Spring grazing treatments and fire are also being used to reduce smooth brome grass. Fire is also used to remove cedar trees invading native prairies. The acreages for these treatments are listed under the grassland section.

Leafy spurge is present in several locations covering less than ten acres. Insect releases for biocontrol have been made in some patches of spurge and several patches have been sprayed with herbicide. Canada thistle is also present in small amounts in meadows and along the edges of wetlands. High water has reduced the range of this plant on the Refuge. Insect releases for its control have also been made.

Reed canary grass and Russian olive are present in small areas but have not been treated.

## Public Use

Valentine NWR has no accurate counts of the Refuge's visitors; thus, the quality of information on public use on the Refuge is poor. For calendar year 1997, visitations to Valentine NWR were estimated at 9,500 visits with approximately 90 percent made up of anglers. Fishing visits were lower in 1997 due to poor ice conditions during the winter fishing season. The remaining 10 percent of visitors were mostly hunters. Increasing numbers of people are visiting Valentine NWR for the purpose of bird and other wildlife observation.

News releases on Refuge events are written and distributed to area television and radio stations, as well as to newspaper outlets. The Fort Niobrara/Valentine NWR Complex also hosts special events including the Nebraska Federal Junior Duck Stamp Contest, a kids fishing day, a steel shot clinic, and a nature fest. Unfortunately, some requests for tours and educational programs are denied due to staffing shortages.

Valentine NWR is outfitted with three information kiosks at major entry points to the Refuge. The kiosks have general information on the Refuge, a map, information on management of grasslands for wildlife, and leaflet dispensers.

Blinds for observing prairie grouse displays are set up in the spring and receive plenty of use. People come to the Refuge to birdwatch and enjoy the prairie. No counts are made for this type of visitation, but Refuge staff believe that it may be increasing.

Waterfowl hunting is permitted only in the Watts, Rice, and Duck Lakes areas of the Refuge according to the State's seasons and limits. No counts were made, but it is estimated that about 75 visits were made by duck hunters.

The Refuge is open to hunting of sharp-tailed grouse and prairie chickens during the State set season that runs from mid-September through December. The Refuge is a popular place for out-of-state, as well as Nebraska, hunters to pursue prairie grouse. Grouse hunters are surveyed via wing collection boxes placed around the Refuge. In 1997, 258 hunter days were recorded through the collection boxes. However, not all hunters participate in the voluntary collection program.

The Refuge is also open to pheasant hunting during the State set season that runs from the first weekend of November through the end of January. Pheasant hunters made an estimated 100 visits to the Refuge in 1997. This is a large number of hunters considering that bird numbers remain very low.

The Refuge is open to deer hunting during the Nebraska rifle deer season in November. Most of the deer hunting takes place on opening weekend. In 1997, a total of 88 deer were harvested including both white-tailed and mule deer. These figures come from deer checked by Refuge law enforcement officers and records obtained at Nebraska Game and Parks check stations. The Refuge probably receives the heaviest hunting pressure of any location within the state hunting units. A higher quality hunt is possible if opening day is avoided.

The Refuge is also open to muzzle loader deer hunting. The season runs for two weeks in December. Hunting pressure is light and only seven muzzle loader hunters were known to hunt on Valentine NWR in 1997. This form of hunting is, however, becoming more popular. Permits are unlimited and statewide; either sex.

The Refuge is also open to archery deer hunting which runs from mid-September through the end of December. Only a few hunters were known to have visited the Refuge to archery hunt in 1997.

Coyotes can be hunted on the Refuge from December 1 through March 15. A free permit is required and can be obtained in person or by mail. The permit is a postcard that the hunter returns at the end of the season and includes harvest information. For the 1996-1997 season, 37 permits were issued.

Nine Refuge lakes (Watts, Rice, Duck, West Long, Pelican, Hackberry, Dewey, Clear, and Willow) are open to fishing year round. Fishing, especially ice fishing, accounts for most visits to Valentine NWR. An estimated 7,900 visits were made for fishing in 1997. This figure is based on very limited counts of anglers throughout the year. In 1997, ice was on the lakes for fewer days than average resulting in lower visits for ice fishing. In some heavy use years, up to 17,000 anglers have been counted.

Bass, perch, bluegill, muskie, saugeye, and northern pike are present in the fishing lakes. Size limits are in effect to protect larger pike needed for carp control and minnows are prohibited on Refuge lakes to prevent introduction of exotic fish. Gas powered boats are not allowed. Catch-and-release for bass and muskie is in effect on Watts Lake. The Refuge lakes are most noted for large bass, catch-and-release northern pike fishing, and large bluegills. Many Master Angler (trophy) fish are caught each year.

The Fort Niobrara/Valentine NWR Complex has one seasonal and four collateral duty law enforcement officers.

## Partnerships

The Refuge works with organizations and individuals in a variety of areas but mostly in monitoring. Cooperative efforts in monitoring are listed in the next section. Fort Niobrara/Valentine NWR Complex staff works with the following groups: with private landowners through the Partners in Wildlife Program; with the Natural Resource Conservation Service in the Wetland Reserve Program; with Farmers Service Agency in the easement program; with Cherry County Extension in educational programs; with local law enforcement; with the Niobrara Council on wild and scenic river management; state, Federal, and local agricultural agencies in weed control; U.S. Forest Service; and U.S. Geological Survey.

The Refuge has formal agreements with rural fire protection districts to suppress wildfires both on and off the Refuge. Biologists from four universities regularly study reptile physiology at the Refuge. The Refuge plans grazing for, maintains the fence on, and patrols the Willow Lake Game Management Area adjacent to the Refuge. The Service works with Nebraska Game and Parks in fish stocking, fish egg collection and law enforcement. The Refuge staff works with the eight Refuge grazing permittees to manage grasslands on the Refuge using cattle.

## Monitoring

The Refuge has one full-time biologist who conducts biological monitoring on the Refuge with occasional assistance from other staff. The main emphasis is on grassland monitoring. Grassland transects are run each year to evaluate cover, composition, and grassland health. More than 100 photo points are taken to document long-term changes to the grassland. Techniques and information are shared with the Forest Service.

Refuge staff completes segments of statewide surveys in cooperation with the Nebraska Game and Parks Commission including sandhill crane, goose, waterfowl, turkey, deer, wintering eagle, pheasant brood, grouse brood, and prairie grouse breeding and productivity.

The Refuge maintains a weather station in cooperation with the National Weather Service at Hackberry Lake. Refuge staff read and report on U.S. Geological Survey groundwater wells at more than 30 locations on the Refuge. Both these efforts have been conducted for 60 years and yields long-term trend information. Surface water levels are also recorded for some Refuge lakes.

Surveys for sharp-tailed grouse and prairie chicken are performed and used as an indicator of grassland health. In the spring, lek counts are conducted; in the fall, wing collection boxes are maintained. Part of the lek count is a state count block and this information is passed on to the Nebraska Game and Parks Commission. Wing collection from hunters is done in cooperation with the Forest Service and the Nebraska Game and Parks Commission.

Pair and brood counts for waterfowl are done on the Marsh Lakes to assess waterfowl production. Nesting success of ducks is monitored on an island in the Marsh Lakes as part of a long-term study. Colonial and marsh nesting birds are also counted in some areas of the Refuge. Monitoring for avian botulism is conducted in late summer on Refuge lakes and wetlands. An annual count of muskrat houses is done.

Fishery surveys using electrofishing, gill, and trap nets are done on Refuge lakes open to fishing on a regular basis by USFWS Fisheries Assistance Office biologists.

Surveys of the threatened western prairie fringed orchid and endangered blowout penstemon are conducted. When orchids are found they are marked to prevent mowing them during haying operations.

## Historical Alternative

### Grassland/Fenced Animal Management

A major feature of the historical alternative is to reintroduce bison to the entire Refuge. The entire boundary will be fenced. A herd of 500 bison using approximately 7,200 AUMs annually will be the maximum herd size (winter/after sale). All interior fences would be removed. Permittee cattle grazing will be eliminated. Bison will come from excess animals at the Fort Niobrara and other Department of the Interior herds. No Texas Longhorns will be placed on the Refuge.

Big game fences will be electric with a minimum of seven strands. The fence will contain bison within the Refuge, yet will allow egress and ingress of free roaming antelope and deer herds. Bison age and sex ratios will approximate natural free roaming herds. Sufficient monitoring will be conducted to maintain herd composition, health, genetic diversity, and annual surplus removals. Excess animals will be disposed of through traditional sales and donations according to Department of Interior policy.

Grasslands will be maintained by using bison whose distribution will be managed by using fire, water, and placement of salt. Fire will also provide cedar control and grassland invigoration. It is estimated that between 1,000 and 8,000 acres could conceivably be treated annually. Haying would not be conducted on the Refuge.

## Wetland Management

The Service would remove water control structures and restore the designated fishing lakes to natural lake levels. Ditches that have spoil banks present would be filled. The Refuge would not actively practice water level management in lakes and wetlands. Water levels would be allowed to fluctuate with natural conditions.

### Threatened and Endangered Species

The Refuge would continue to maintain existing habitat and document threatened and endangered bird species use. The Refuge will reintroduce blowout penstemon in appropriate sites. The Service will monitor and evaluate the interactions between bison and T&E species.

### Indigenous Wildlife

The Service will identify potential sites and attempt to establish prairie dogs on the Refuge. The Refuge will conduct and promote research and monitoring efforts documenting the historic management setting.

### Exotic and Invading Species

The Refuge will maintain its integrated pest management program. Efforts to use mechanical and some chemical control to reduce Canada thistle and leafy spurge will continue. Increased efforts to reduce cedar through prescribed fire will be conducted.

### Public Use

Lakes open to fishing will not have managed water levels; water heights will fluctuate naturally and fish winter kill would be more frequent.

The current Refuge hunting programs will continue. The Service will initiate hunts for bison as a herd control management method.

The Refuge will increase interpretation of historical ecology. Access to the main herds will be provided by one concessionaire during peak public use periods. Existing access to fishing lakes and other Refuge areas will be maintained for wildlife observation and photography and other public uses.

## Partnerships

The Service will continue its current cooperation with Nebraska Game and Parks Commission for sport fish management. Agreements are in place for wildland wildfire suppression efforts, surplus bison relocation for the Inter Tribal Bison Council, participation in the Niobrara Council, and other common coordination efforts with other agencies and landowners will continue. The Refuge will seek to increase partnerships with other entities, particularly with bison management groups.

## Inventory

The Refuge staff will establish (with Refuge personnel, contract, Biological Resource Division (BRD), or in cooperation with others) an inventory of the flora and fauna to provide a baseline index of current habitat conditions and species utilization for future reference.

## Monitoring

Refuge staff will revise its current monitoring plan. At a minimum the following monitoring will be conducted:

P wildlife herd monitoring sufficient to maintain age and sex ratios, health, genetic diversity, and annual excess removal.

P waterfowl production and migration trends.

P native bird species monitoring to supply trend information on prairie grouse, species of management concern, grassland neotropical migrants, biodiversity trend indexes.

P monitoring fire effects as part of the prescribed burning program.

P monitor habitat parameters (i.e., vegetation composition and structure, tree canopy, etc.) (with a minimum confidence level) to ensure that habitat objectives are being measured for success according to a Habitat Management Plan and the adaptive management process.

## Intensive Wildlife Management Alternative

### Grassland Management

Approximately 6,000 AUMs of forage will be removed annually with short duration grazing by using permittee cattle and longhorn cattle brought down from Fort Niobrara. The number of longhorn AUM's may vary but normally will not exceed 1,500 AUMs. Longhorn cattle use will occur for winter pasture renovation, spring treatment of grasslands, and summer grassland treatments. Longhorn AUM removal will replace permittee cattle AUM removal. This amount of forage removal is similar to existing removal rates (current management). The major difference will be a shift toward higher removal rates in April and May, and less after June 15. Less hay will be removed than is currently removed.

It is estimated that between 1,000 and 4,000 acres could conceivably be treated annually with prescribed fire. The purpose of prescribed fire will be to reinvigorate grassland and to reduce a cedar invasion.

The Service will ensure that 60 percent or more of the Refuge grassland is in an undisturbed cover condition (42,000 acres) annually.

### Wetland Management

Designated fishing lakes would be maintained in their current condition. Ditches that have spoil banks present would be filled. The Service would actively practice water level management in lakes and wetlands. Water levels would be drawn down periodically to control the carp and to increase vegetative and aquatic insect productivity. In fishing lakes, these renovations would include restocking of sport fish.

## Threatened and Endangered Species

The Service would continue to maintain existing habitat and document threatened and endangered bird use. Blowout penstemon will be reintroduced in appropriate sites. The Service will conduct surveys for American burying beetles, and conduct a Refuge-wide survey for blowout penstemon and western prairie fringed orchids. In consultation with Ecological Services staff, the Refuge staff will conduct applied research on management practices to promote increased federally listed plant species production.

### Indigenous Wildlife

The Service will identify potential habitat and attempt to establish prairie dogs on the Refuge to the extent possible. The Service will conduct and promote research and monitor for species of special concern and unique reptiles and amphibians present on the Refuge. Predators would be controlled in prime nesting areas.

### Exotic and Invading Species

The Service will maintain its integrated pest management program. Efforts to use mechanical and some chemical control to reduce Canada thistle and leafy spurge will continue. Increased efforts to reduce cedar through prescribed fire will be conducted.

### Public Use

The number of lakes open to fishing will be reduced. Lakes that remain open to fishing will have managed water levels and periodic drawdowns to renovate lakes and increase productivity. Renovations will include restocking of sport fish.

The current Refuge hunting programs will continue. If crowding develops, the Service will limit, if needed, opportunities to hunt on the Refuge to ensure a quality recreational experience.

The Service will increase the quality of interpretation along major access points. Existing access to fishing lakes and other Refuge areas will be maintained for wildlife observation and photography and other public uses. The headquarters will be moved to a location along Highway 83.

## Partnerships

The Service will continue its current cooperation with Nebraska Game and Parks Commission for sport fish management. Agreements in place for wildland wildfire suppression efforts, participation in the Niobrara Council and other common coordination efforts with other agencies and landowners will continue. The Service will seek to increase partnerships with other groups. The Service will seek to trade Holt Creek WMA to Nebraska Game and Parks Commission for portions of Willow, Rat, and Beaver Lake. The Service will also seek to acquire three inholdings.

## Inventory

The Refuge will establish (with Refuge personnel, contract, BRD, or in cooperation with others) an inventory of the flora and fauna to provide a baseline index of current habitat conditions and species utilization for future reference.

## Monitoring

Refuge staff will revise its monitoring plan. At a minimum the following monitoring will be conducted:

P waterfowl production and migration trends.

P native bird species monitoring to supply trend information on prairie grouse, species of management concern, grassland neotropical migrants, biodiversity trend indexes.

P monitoring fire effects as part of the prescribed burning program.

P monitor habitat parameters (i.e., vegetation composition and structure, tree canopy, etc.) (with a minimum confidence level) to ensure that habitat objectives are being measured for success according to a Habitat Management Plan and the adaptive management process.

## Modified Historical (Preferred) Alternative

### Discussion of Influencing Factors on Decision to Select Preferred Alternative

During the initial interagency comment period, several comments were made that the document did not give a clear understanding of the reasons why the following alternative was chosen. The following discussion addresses these concerns.

Regional and field staff believed that the historical grassland management setting and species that contributed to that setting were important. The U.S. Fish and Wildlife Service is focused on preserving wildlife species and wildlands and strongly believes in maintaining ecological relationships. A major herbivore, the bison, is missing from Valentine NWR. Although bison have been as close as the Fort Niobrara NWR, the Service has substituted domestic cattle throughout the years in an attempt to achieve the overall habitat objective of the Refuge. It was believed that this was an appropriate time to begin to phase into this change and return the species and, with that, put a major species back into the ecological setting of the Refuge.

Another ecological force, fire, is also believed to be important. Obviously, concerns with the safety of this tool exist. Recent increases in the Service's funding for prescribed fire and increased ability to use the tool safely, make it an appropriate time to expand the use of this tool and expand the benefit it provides to grassland ecology.

The Service will use an adaptive management strategy to implement this alternative. The primary focus will be to achieve the habitat objectives defined for migratory birds and other wildlife with bison being the most significant management tool. Initially, bison will be used on a portion of the Refuge to determine if the mosaic of 50 percent undisturbed cover and plant composition can be achieved in the tested area. Various management strategies such as fire, salt, fencing, etc., will be utilized and modified to achieve the desired grassland conditions. A period of at least five years will be needed to assess the results of habitat management through the use of bison in the tested area. If the findings are favorable to achieving the habitat and migratory bird objectives, the portion of the Refuge utilizing bison grazing will be expanded as funding permits. If the findings conclude that bison cannot be used to achieve the described habitat and wildlife objectives, this alternative will be revised to utilize domestic livestock as the tool of choice.

Other aspects of the plan are similar to the current management regime of the Refuge. These programs are largely successful, well received by the public, and there were no reasons to change them significantly. Some additional discussion on this issue is found in the Environmental Consequences Section.

## Grassland Management

A major feature of the preferred alternative is to reintroduce bison to the Refuge. This would be conducted in a phased-in approach with the first bison placed in the southwest portion of the Refuge. In this area, numbers of bison will be matched to the fenced area, as much interior fence as possible will be removed, and prescribed fire, water, and salt placement will be used to influence use by bison. At least five years will be used to evaluate the effects of this change on grasslands and wildlife. After evaluation, the Refuge will either expand the area grazed by bison as funding permits or utilize domestic livestock as a grassland management tool. Bison will come from excess animals from Fort Niobrara. If evaluation determines that bison are effective in meeting the goals of the Refuge, eventually a herd of 450 bison utilizing approximately 6,480 AUM's would be present. If bison are reintroduced, grazing by cattle would be phased out. No Texas longhorn cattle from Fort Niobrara NWR will be placed on Valentine NWR.

Big game fences will be electric wire fence that controls bison within the fence, but allows existing free roaming antelope and deer ingress and egress. The proposed makeup of the bison herd has not been fully determined. Several different strategies could be implemented. Excess animals will be disposed of through traditional sales and donations according to Department of Interior policy.

**Strategy A:** The bison herd age and sex ratio composition will be similar to many private herds. The males will be young animals to simplify ease of handling, and the herd will be largely cows, approximate sex ratios of 1 bull:12 cows. The herd will be managed primarily by a formal cooperative agreement with a private bison manager or contractor. Major responsibilities of the bison manager will be day-to-day herd management, maintenance of boundary and other fence, roundup and sale of excess animals according to Refuge specifications, and coordination with Refuge

staff. Major Refuge staff responsibilities will be habitat and other wildlife management.

**Strategy B:** Strategy B is the same herd makeup as above; the difference would be that Refuge employees will be responsible for day-to-day herd management, and roundup and sale of excess animals.

**Strategy C:** Strategy C is to maintain a herd similar to the existing Fort Niobrara herd, simulating natural free roaming herds. This would mean older age bulls, and more bulls so that a 1:1 sex ratio exists. This may require a more substantial and costly fence, which if similar to Fort Niobrara's fence appearance, would allow the addition of elk to the Refuge. The Refuge staff would be responsible for day-to-day management, sufficient monitoring to maintain herd composition, health, genetic diversity, and annual excess removals.

Under all strategies current levels of grassland use will be maintained so that a minimum of 60 percent of the meadow areas and 55 percent of the hills are in undisturbed cover.

The use of prescribed fire will be increased to invigorate grasslands, provide cedar control, and assist in managing areas used by bison. From 1,000 to 8,000 acres could conceivably be treated annually.

## Wetland Management

The Service will continue to maintain water control structures and depths appropriate for sport fisheries at designated fishing lakes. Ditch plugs will be placed on ditches unnecessary for water management. The Refuge staff will conduct drawdowns and renovations of wetlands and lakes when possible to rejuvenate wetland plant productivity and diversity, and provide carp control. Sport fishing lakes may periodically be drawn down and renovated. Renovations in these cases would include restocking with appropriate mixes of sport fish species.

## Threatened and Endangered Species

The Refuge staff will continue to maintain existing habitat and document endangered bird use and will conduct surveys for American burying beetles. The Refuge staff will intensify efforts to reintroduce blowout penstemon and will conduct Refuge wide surveys for it and western prairie fringed orchids. In consultation with the Service's Ecological Services staff, the Refuge staff will conduct applied research efforts to determine management practices promoting these species. The Service will maintain existing woodland, and promote regeneration of woodland habitat along lake borders that are important as bald eagle roosting sites.

## Indigenous Wildlife

The Service will identify potential sites and attempt to establish prairie dogs on the Refuge. The Refuge will be able to exclude prairie dogs from areas where their presence presents a safety hazard. The Service will maintain the existing furbearer harvest program, which uses trapping as a management tool to achieve Refuge wildlife objectives.

## Exotic and Invading Species

The Service will continue its integrated pest management program. Mechanical and some chemical control to reduce Canada thistle, invasive cool season grasses, and leafy spurge will continue. Increased efforts to reduce cedar and exotic cool-season grasses through prescribed fire will be conducted.

## Public Use

The Service will continue its current sport-fishing program on nine designated fishing lakes. No additional lakes will have sport fish stocked in them.

The current Refuge hunting program will continue with the exception of 160 acres adjacent to the Hackberry Civilian Conservation Corps fire tower which will be closed to hunting. This no-hunting area will be from the west side of the George Wiseman Research Natural Area west to the county road. This fire tower, which is adjacent to the Wiseman Natural Area, will be enhanced to support the addition of a self-guided nature trail and interpretive observation deck on the tower.

The Service will seek funds to move the headquarters to an area along Highway 83 to improve environmental education and interpretation of wildlife and cultural and historic resources on the Refuge. Access to the main bison herd will be allowed through one concessionaire on the Refuge during peak public use periods, as part of an overall Refuge program to educate the public regarding bison and other wildlife. This concessionaire may conduct trail rides during certain times of the year. Current facilities, wildlife observation, and photography uses will remain open.

## Cultural Resources

The Service will develop a cultural resource/paleontological management plan. The plan will include Refuge-wide cultural resource inventory and (paleontological) resource inventory strategies. It will also include increased interpretation and protection of and education about the cultural resources on the Refuge.

## Partnerships

The Service will continue its current cooperation with Nebraska Game and Parks Commission for sport fish management. Agreements in place for wildland wildfire suppression efforts, excess bison for the Inter Tribal Bison Council, participation in the Niobrara Council, and other common coordination efforts with other agencies and landowners will continue. The Refuge will seek to increase partnerships with other entities.

The Service will seek to develop outside funding sources and support for implementing some aspects of this preferred alternative. Examples would be moving the subheadquarters, big game fence, and possible acquisition of several inholdings from willing sellers. Trading Holt Creek Wildlife Management Area for portions of Rat, Beaver, and Willow Lake State WMA's will be pursued with Nebraska Game and Parks Commission. A partnering effort in bison management will be pursued.

## Inventory

The Refuge will establish (with Refuge personnel, contract, BRD, or in cooperation with others) an inventory of the flora and fauna to provide a baseline index of current habitat conditions and species utilization for future reference.

## Monitoring

Refuge staff will revise its monitoring plan. The subsequent section, Implementing the Plan, lists the major monitoring and survey efforts the Refuge will undertake as part of this alternative.

A more in-depth monitoring proposal/plan will be completed in order to compare the change (if any) of grassland species composition and structure and subsequent wildlife response when bison and fire are introduced as major habitat management tools.

## Yellowthroat Wildlife Management Area

This alternative includes the continued management and conservation of the Yellowthroat Wildlife Management Area formerly known as the Tower WMA. This area is located in Sections 25 and 26, T28N, R22W, Brown County, Nebraska. The area is composed of a 480-acre parcel owned in fee title by the Service and an adjacent 440 acres protected by a Farmers Home Administration Conservation Easement. Together, the 920 acres protect 153 acres of wetland and 767 acres of Sandhill Prairie, much of it restored after being cropped in the 1980's. The area is physically located 13 miles south of Ainsworth, Nebraska on Highway 7 and is accessible by prairie trail.

Grassland and wetland habitats will be managed with fire, rest, and permittee grazing under the same objectives as discussed previously for Valentine NWR. Some restoration of sandhill prairies is still needed on previously cropped areas. The major habitat goals will be to have a high quality prairie and wetland environment present for use by migratory waterfowl and other wildlife.

Portions of the tract will be open to fishing, hunting, wildlife observation, and photography in the same manner and under the same authority as Valentine NWR.

## Holt Creek Wildlife Management Area

This alternative includes the proposed exchange of the Holt Creek Wildlife Management Area for the Willow Lake and Rat and Beaver Lake properties presently owned and managed by the Nebraska Game and Parks Commission. The Nebraska Game and Parks Commission lands are located adjacent to Valentine NWR. The Holt Creek Wildlife Management Area is located about nine miles north of Springview, NE in section 32, T35N, R20W in Keya Paha County, Nebraska. Holt Creek flows through the 180 acre property which has a mix of woodlands and grasslands. Prior to the proposed exchange the tract will be open to hunting, wildlife observation, and photography in the same manner, and under the same authority, as Valentine NWR. Habitat will be managed with permittee grazing, fire and rest.

## Implementing the Plan (Preferred Alternative)

This section is intended to provide additional information to the preferred alternative section above. Where possible; time frames are delineated, specific strategies and actions are stated, and a list of projects and a summary of estimated project costs are presented.

### Habitat

#### Grassland

Bison from Fort Niobrara NWR will be used to stock Valentine NWR. Permittee grazing and haying will be phased out as bison are reintroduced. Present permittees will retain their grazing privileges for ten years following the signing of this plan. Any permittees who drop out during the ten-year period will not be replaced. As permittees leave in the next ten years, bison will be reintroduced to the Refuge. At the end of ten years, if all the Refuge is not fenced for bison, a bid system will be used to secure permittee grazing. Permittees may be required to move their cattle longer distances within the Refuge as areas are fenced for bison. The entire boundary will be fenced with a bison proof electric fence phased in over time.

Corrals will be built to sort, handle, and load bison.

Some windmills will be retained to provide water for bison herds during the winter, to attract bison to areas in need of grazing pressure, and as a water source for wildland wildfire suppression efforts.

Placement of salt will be used to attract bison to areas needing grazing.

Some interior electric fencing will be retained or constructed to control bison movements and allow habitat rest in some areas. This fence will be removed in increments and effects of removal on grasslands and bison movements monitored. Approximately 250 miles of interior fence will be removed. The 100 miles of electric fence can probably be sold.

Monitoring of fire effects on grasslands and animal distribution will be conducted by fire staff.

Additional equipment for prescribed fire work will be needed.

Fences around existing tree plantings will be removed; no new tree belts will be planted. Tree rows planted by the Civilian Conservation Corps will not be removed, replaced, or fenced.

## Wetlands

Old ditches draining Refuge wetlands will be plugged.

Continue use of northern pike as a predator to control the carp.

Carp barriers will be constructed where needed and renovations conducted where possible. Restocking of Refuge wetlands and lakes will be done with native fishes. Drought and winterkill may present opportunities for renovation and exclusion of the carp. Maintain water control structures on three lakes and build carp barriers on Marsh Lakes.

Remove Calf Camp water control structure, replace with a culvert, and return the wetland to its natural level.

A Crissafulli pump is needed to increase water management capabilities.

## Habitat Acquisition

A trade of land in fee title or a management agreement will be sought for the exchange of the U.S. Fish and Wildlife Service's Holt Creek Wildlife Management Area for the Nebraska Game and Parks Commission's Willow Lake and Rat and Beaver Lakes Wildlife Management Areas.

Trades or purchase of lands with willing landowners will be sought to reduce inholdings and straighten boundaries, and reduce boundary fencing costs.

## Wildlife

Bison will be phased-in to the Refuge grassland program and permitted to increase to a herd size of 450 head.

Establish at least one prairie dog town east of Highway 83 and at least one west of Highway 83 of 400 acres each, if suitable habitat is present. Towns will not be established adjacent to Refuge boundaries.

Conduct an education program to reduce turtle mortality from visitors driving Refuge trail roads and/or modify trails to ensure reduced turtle mortality.

Continue monitoring prairie grouse populations using lek counts and the hunter harvest survey.

Annually conduct the Breeding Bird Survey route at Valentine NWR.

Use point count or line transects to sample grassland, wetland, and woodland songbirds; annually conduct a colonial nesting bird survey.

Limited trapping by Refuge staff and a public trapping program for management purposes will continue.

Conduct a feasibility study, and if feasible, reintroduce sandhill cranes as a nesting bird.

Waterfowl pair and brood counts will be conducted on a sample of Refuge lakes.

Monitor reptile, amphibian, and small mammal populations at five year intervals.

Conduct a survey to determine native fish species presence and abundance.

Maintain a sport fishery in the nine lakes presently open to fishing in cooperation with Nebraska Game and Parks Commission by using fish stocking, transfer of fish between lakes, surveys, drawdowns, renovations, brood stock, and egg harvest.

Fishery surveys using electrofishing, gill and trap nets will be done on a regular basis by the USFWS Fisheries Assistance Office.

Conduct an annual winter count of muskrat houses.

Refuge lakes and wetlands will be monitored for botulism and other diseases, dead birds picked up, and disposed of according to USFWS regulations.

Conduct American burying beetle surveys.

Completing the above monitoring and survey requirements will require the addition of two seasonal biological technicians.

## Interpretation and Recreation

Interpretation, environmental education, wildlife observation, and photography

Prepare a site plan under contract. This site plan will include information on visitor access, interpretive themes, and locations for future developments.

The rest rooms, information area, and boat ramp at Hackberry Headquarters will be closed.

Construct an observation platform on the Hackberry CCC fire tower, and provide a self-guiding nature trail leading from the parking area to the Hackberry CCC fire tower.

Provide a self-guiding auto tour route passable in a passenger car. Cost is variable depending upon location and distance.

Maintain information kiosks/leaflet dispensers at the main Refuge entrances.

Provide one information and regulation sign at entrances and remove most of the regulation and information signs in the interior of the Refuge.

Update Refuge brochures to the new USFWS standard.

Provide access for viewing to the main bison herds and roadless areas of the Refuge through a concessionaire.

Provide blinds for viewing prairie grouse on leks.

Designate a prairie hiking trail for visitors to get to remote areas of the Refuge on foot.

Move headquarters to a location along Highway 83 and provide staffing during the week to provide information to visitors.

## Fishing

Provide one improved boat ramp at all fishing lakes except Rice which will remain walk-in fishing only.

Develop one additional handicapped accessible fishing dock and parking area on the Refuge. Other accessible sites will be provided in future years.

Use of live minnows will be prohibited.

Electric motors, row, and paddle power will be allowed; gas powered motors will be prohibited.

Guiding will be allowed under a permit; a maximum of five guides will be allowed. Guides will be selected by lottery if demand exceeds supply. Guides will pay a fee of a percent of gross receipts and/or a flat fee to the Refuge.

Catch-and-release fishing tournaments by nonprofit groups will be permitted.

Taking of frogs, turtles, and minnows will not be authorized.

Size limits and catch-and-release may be used to manage northern pike for carp control and provide a trophy fishery.

The Refuge fishing leaflet will be updated to USFWS standards.

## Hunting

Waterfowl, deer, prairie grouse, pheasants, dove, and coyote hunting will be allowed in designated areas of the Refuge. If elk are reintroduced to the Refuge, limited hunts will be allowed with permits available by drawing and an application fee will be charged.

Guiding will be allowed by permit with a maximum of five guides allowed. Guides will be selected by lottery if demand exceeds supply. Guides will pay a fee of a percent of gross receipts and/or a flat fee to the Refuge.

No new roads will be constructed for hunter access; some existing hunting access roads will be improved to all-weather roads as funding permits.

Hunting tournaments will not be allowed on Valentine NWR.

Dog training will not be allowed outside regular hunting seasons.

If crowding occurs or develops during hunting seasons, a permit system with drawings for permits will be instituted.

Persons charging a fee for the use of their horses to haul big game from the Refuge will be required to obtain a permit and pay a fee.

## Cultural Resources

A cultural resource inventory will be completed under contract.

The history of the Civilian Conservation Corps will be interpreted at the fire tower observation platform.

Staffing Needed to Implement the Valentine NWR Preferred Alternatives (CCP)

The following staff chart shows current staff and proposed additional staffing needed to fully implement the preferred alternative. If all positions were filled, the Refuge Complex can carry out all aspects of the preferred alternative. If some positions are not filled, all aspects of the plan cannot be completed or those completed may be done over a longer period of time. Staffing and funding are expected to come over the 15-year life of this plan. Positions marked with an \* are shared with Fort Niobrara NWR. The new refuge operations specialist position would be responsible for the Partners For Wildlife program, Holt Creek WMA, and Yellowthroat WMA. (X = filled; -- = vacant)

Position	Current	Proposed
Refuge Manager*	X	X
Refuge Operations Specialist	X	X
Refuge Operations Specialist*	--	X
Outdoor Recreation Planner*	--	X
Law Enforcement Officer*	X	X
Administrative Officer*	X	X
Office Automation Clerk*	X	X
Wildlife Biologist	X	X
Biological Technician	--	X
Biological Technician/Seasonal (2)	--	X
Heavy Equipment Operator*	X	X
Maintenance Worker	X	X
Maintenance Worker (2)	--	X
Maint. Laborer/Seasonal (2)	--	X
Asst. Fire Management Officer*	X	X
Range Technician (Fire)	X	X
Firefighter/Seasonal (3)	X	X

Funding Needed to Implement Valentine NWR Preferred Alternative (CCP)

The Refuge currently has a large backlog of maintenance needs. The needs are recorded in a national Maintenance Management System (MMS). In 1997, under current management plans, the backlog for Valentine NWR was \$3,633,000. Most of these maintenance needs would also need to be met under the preferred or other alternatives. A synopsis of these needs is listed below:

Vehicles and Equipment	\$794,000
Fences, Windmills, Tanks	\$230,000
Water Control Structures and Dikes	\$258,000
Roads and Gates	\$790,000
Public Use Facilities	\$131,000
Buildings and Maintenance Facilities	\$672,000
Residences	\$282,000
Administrative Buildings/Facilities	<u>\$476,000</u>
TOTAL	\$3,633,000

The System uses another database, Refuge Operating Needs System (RONS), to document proposed new projects that will implement a comprehensive conservation plan, implement ecosystem or endangered species goals or meet legal mandates. In 1998, the total for projects in the RONS is \$6,543,000 with annual recurring costs (including salary costs) of \$475,000. Most of this cost is associated with the need to upgrade substandard roads. A synopsis of these needs is listed below:

	Construction	First Year	Annual Recurring
Roads, parking areas/related facilities	\$5,650,000	\$358,000	\$205,000
Biological Monitoring and Studies	--	\$283,000	\$149,000
Habitat Restoration	\$ 115,000	\$ 27,000	\$ 9,000
Habitat Management	--	\$118,000	\$ 80,000
Partners for Wildlife Program	--	\$ 27,000	\$ 2,000
Resource Protection	\$ 320,000	\$275,000	\$ 30,000
Public Education and Recreation	\$ 458,000	\$358,000	\$205,000
<b>TOTAL</b>	<b>\$6,543,000</b>	<b>\$1,446,000</b>	<b>\$680,000</b>

The preferred alternative also proposes projects that have costs that are not included in the MMS or RONS. The total of these costs is \$3,256,000. A summary of these costs follows:

Bison fence and corrals (for entire Refuge)	\$2,200,000
Carp and water control structures	160,000
Move headquarters to site along Highway 83	640,000
Wildlife projects	38,000
Public use projects	18,000
Cultural resource inventory	200,000
<b>TOTAL</b>	<b>\$3,256,000</b>

## Affected Environment

### Geographic/Ecosystem Setting

Valentine NWR is 71,516 acres in size and lies in the heart of the Nebraska Sandhills, the largest sand dune area in the Western Hemisphere and one of the largest grass-stabilized regions in the world (Bleed and Flowerday, 1989). The Sandhills are characterized by rolling, vegetated sand dunes and interdunal valleys which spread over the landscape from a northwest to southeasterly direction. Native grasses predominate. Many shallow lakes and wetlands are interspersed in the lower valleys. Wildlife diversity, except large ungulates and their predators, is relatively unchanged since early settlement in the Sandhills.

Grassland comprises 90 percent of the 19,300 square mile region with nearly 97 percent of the total acreage being in private ownership (Bleed and Flowerday 1989). The predominant land-use of the Sandhills is beef cattle production which can have significant impact upon the biological diversity of native flora and fauna. Management of lands adjacent to the Refuge and throughout the Sandhills employ a combination of grazing and haying to support the ranching economy. A variety of grazing treatments and rotations are used. Most meadows are mowed or hayed annually. Prescribed fire is used very rarely. Grasslands seldom receive a prolonged rest treatment.

In the Sandhills, habitat is not a limiting factor for those species of wildlife that rely on, or are tolerant of, disturbed cover (i.e., mowed and/or grazed grasslands). Valentine NWR is one of the few areas in the Sandhills where management can be dedicated to enhancing those species of flora and fauna that do not thrive under management strategies emphasizing economic return.

An estimated 177,000 acres of open water and marsh and 1,130,000 acres of wet meadows remain in the Sandhills. These are mostly freshwater wetlands and include wet meadows, shallow marshes, fens, alkaline wetlands, and range in size from 1 to 2,300 acres with 80 percent of them less than 10 acres in size (LaGrange 1997). Many Sandhills wetlands have been drained in attempts to increase hay production. Estimates of the amount drained range from 15 percent (McMurtry et al. 1972) to 46 percent (USFWS 1986). Wetland drainage continues to this day. On Valentine NWR there are drainage ditches dug before the area became a Refuge. Most do not carry water but in very high water years.

An Atlas of the Sandhills, 1989, by Bleed and Flowerday, is an excellent reference for those wanting more in-depth information on the Sandhills of Nebraska.

## Climate

The climatic patterns of the Nebraska Sandhills are characteristic of the Central Great Plains. The climate is continental with cold winters and hot summers with frequent thunderstorms occurring from the spring to late summer. Annual precipitation averages 17 to 23 inches from the western to the eastern portion of the Sandhills (Wilhite and Hubbard 1989) and, coupled with high evapotranspiration rates, has significant ecological effect on the region. Valentine NWR has been an official weather station since 1935. Annual precipitation since 1945 has averaged 21.6 inches. Temperature extremes range from -38°F in the winter to 111°F during the summer. Climatological conditions have generally been favorable since the mid 1970's and relatively high annual precipitation levels have resulted in positive net moisture balances (annual precipitation minus open pan evaporation) during most years since 1976.

### Air Quality

Air quality is good due to the distance to any urban or industrial areas from the Refuge.

### Soils

Most of the soils are wind-laid sand that has not been held in place long by vegetation. They are light colored and have little organic matter. The soils in basins, valleys, and wet meadows have thicker and darker surface layers and more organic matter than soils found in the hills. Rainfall is quickly absorbed by the sandy soils and causes little erosion and low evaporation rates. Native grasses grow well in these conditions. Soil exposed by overgrazing or plowing is subject to wind erosion (Layton et al 1956). The main soil types are the Valentine-Els-Tryon and Valentine-Thurman Associations (Kuzila 1989). In 1997 and 1998 the soils of the Refuge were surveyed for mapping by the Natural Resource Conservation Service.

## Water Resources and Associated Wetlands

The Nebraska Sandhills overlay the High Plains Aquifer - commonly referred to as the Ogallala Aquifer. This groundwater resource creates an interspersed of shallow lakes, semi-permanent, and temporary wetlands in the lower elevations and valleys where the groundwater level is exposed. Water resources are the driving force supporting the ecological diversity and integrity of the Nebraska Sandhills.

There are 37 major wetland complexes on Valentine NWR totaling approximately 13,000 acres. These wetlands are a mix of shallow lakes, marshes, seasonal wetlands, wet meadows, fens, and small streams that run during high water periods. Wetlands are well dispersed throughout the Refuge grasslands. Submergent and emergent vegetation in lakes and marshes range from very sparse to dense depending on soils and alkalinity. Emergents include cattail, bulrush, wild rice, and phragmites. Vegetation bordering wetlands is primarily grasses. Some lakes are bordered by trees on the south shores.

Water control structures have been installed on six lakes, however, only four can increase water elevations significantly above the maximum, naturally functioning level. Several Refuge lakes have water level gauges where records of lake levels are recorded. Refuge staff also record water levels in U.S. Geological Survey groundwater survey wells. Some old drainage ditches dug before the Refuge was established remain. These ditches are only partially functional due to siltation and perhaps poor design. In several areas, wetlands have been dug out in wet meadows and fens to produce open water areas.

Most of the wetlands on the Refuge rise and fall depending on precipitation and groundwater levels. Precipitation for the past 17 years has been high resulting in record levels for lakes. The Marsh Lakes, historically a very large cattail marsh with three areas of open water and a closed basin, is now one large lake with water flowing out of the basin. Refuge wetlands normally function as a closed system and only during high precipitation periods does excess surface water exit the Refuge. Refuge wetlands are shown in Figure 2.

## Vegetation

### Grasslands

Sandhill Prairie is within the wide transitional zone of the Mixed Grass Prairie between Tallgrass Prairie and the Short Grass Plains. Annual precipitation is typical of the semi-arid Mixed Grass Prairie; however, the Nebraska Sandhills is characterized by a predominance of post climax tallgrass species typical of a greater moisture regime (Oosting 1948, Keeler et al. 1980). This mixture and general dominance by Tallgrass Prairie species is locally influenced by topography (i.e., the soil moisture holding capacities and soil moisture penetration in different textures of the sand soil range sites and the root structures and the photosynthetic strategies of cool and warm season plants) (Tolstead 1942, Barnes 1984). Refuge vegetation is shown on Figure 3. Four basic range sites are located within the Sandhills.

Wetland range sites are the low meadow sites dominated by grass species that thrive in a moisture saturated soil profile (i.e., prairie cordgrass, blue-joint reedgrass, sedge species, and non-grass species such as golden rods, saw-toothed sunflower and willows). A federally threatened species, western prairie fringed orchid, is found within the wetland range site.

Sub-irrigated range sites are meadows that are very close to the groundwater level. Sub-irrigated range sites are dominated by Tallgrass Prairie species such as big bluestem and Indian grass. Soil moisture in the sub-irrigated range site is adequate to support the deep rooted warm season native grasses even during periods of drought. Sub-irrigated range sites are commonly invaded by exotic species such as Kentucky bluegrass, smooth brome, and red top.

Sand range sites comprise the dry meadows (low sand sites) and the gently undulating Sandhills. Native vegetative species common to the sand range sites are cool season grasses: needle-and-thread, porcupine grass, prairie June grass and western wheat grass; and warm season grasses typical of the Tallgrass Prairie: prairie sandreed, sand bluestem, sand love grass, little bluestem, and switchgrass. Typical non-grass species of the sand range site include stiff sunflower, yucca, lead plant, and prairie rose. Exotic smooth brome and Kentucky bluegrass tend also to invade the lower elevations of the sand range sites.

Figure 2



Figure 3



Choppy sand range sites are the characteristic sand dunes for which the Nebraska Sandhills is named. Many vegetational characteristics are common to the sand range sites, but there is a greater proportion of unvegetated sand soil surface that is subject to wind and water erosion. Typical perennial grasses include: blue grama, sand bluestem, prairie sandreed, blowout grass, sand love grass, little bluestem, spiny muhly; and non-grass species include yucca, prairie rose and sunflowers. The federally endangered species, blowout penstemon, is endemic to the Nebraska Sandhills and its characteristic habitat includes the blowouts and open sand areas of the choppy sand range sites.

Native perennial and annual flowering forbs adorn the various range sites on Valentine NWR; some of which are only found on native grasslands that have not been degraded by the impact of modern man (i.e., conversion of grassland to farm land, use of herbicides, and chronic overgrazing of livestock) (Weaver 1961, Farrar 1990).

## Trees

Approximately 45 species of native and introduced trees and shrubs exist in the Sandhills. Native willows are found around wetlands as are occasional cottonwoods. Hackberry, choke cherry and American plum are found on the north slopes usually adjacent to the south sides of lakes. The abundance of woody cover has drastically changed since Valentine NWR was established. Many shrub and tree species, including nonnatives, were planted by the Civil Conservation Corps during the 1930s. Since then cedar and Russian olive trees have been expanding and invading grassland and are beginning to jeopardize the floral and faunal integrity of native Sandhills Prairie.

## Threatened and Endangered Plants

### Blowout Penstemon

Hayden's, or blowout penstemon, is perhaps Nebraska's rarest plant and is listed as endangered under the provisions of the Endangered Species Act (Farrar 1990). Listing was accomplished in 1987. This species is endemic to the Nebraska Sandhills and is dependent upon disturbance, to promote the blowouts or open sand habitat, for its existence (Fritz et al. 1992). The plant grows in and around blowouts, areas of open sand maintained by wind erosion. A small number of naturally occurring blowout penstemon plants have been found in three locations on the Refuge. In recent years, seedlings have been transplanted into nine blowouts in an attempt to increase the population.

Blowout penstemon has also been documented at two locations immediately adjacent to Valentine NWR. Since 1979, annual inventories have been conducted by personnel from the University of Nebraska-Lincoln, Chadron State College, and Valentine NWR.

### Western Prairie Fringed Orchid

The western prairie fringed orchid is one of Nebraska's rarest wildflowers (Farrar 1990) and, in 1989, was listed as threatened under the provisions of the Endangered Species Act. Prairie fringed orchid site locations are characterized by a high soil moisture profile common to the wetland range sites on Valentine NWR (Fritz 1993). Since 1985, inventories have been performed by Nebraska Game and Parks Commission and Valentine NWR personnel. Prairie fringed orchids have been documented at eight sites on Valentine NWR and at three sites on private land immediately adjacent to Valentine NWR.

Grassland management treatments that pose a threat to prairie fringed orchids are continuous and/or inopportune timing of grazing and mowing; the indiscriminate use of herbicides; and application of insecticides that may affect populations of the insect pollinators (Fritz 1993). Prairie fringed orchids have been reported to respond to spring grassland burns (Sather et al. 1992) and fall burns (Hull-Seig and King 1995). Management on Valentine NWR involves excluding prairie fringed orchids from mowing and grazing manipulative treatments during the critical period of plant growth through the maturation of seeds (June - September).

## Wildlife

The Sandhills of Nebraska is one of the few prairie areas in the United States that has not been converted to farmland. This, plus the abundance of a variety of wetlands, has resulted in most of the native plants and animals historically found in the area still being present today. A list of bird, mammal, amphibian and reptile species present at Valentine NWR can be found in Appendix B.

### Birds

The avifauna of the Nebraska Sandhills is extremely diverse with 270 species making up the Valentine NWR bird list. There are four endangered species that are migrants or winter residents only and three species on the species of management concern. Of the latter three, the ferruginous hawk is a migrant and the black tern and loggerhead shrike are abundant and common breeding species on Valentine NWR.

Many herons, egrets, shorebirds, and marsh and waterbirds use the Sandhills wetlands for nesting and migration. The North American Waterfowl Management Plan lists the Sandhills as a habitat of major concern in North America (USFWS and CWS 1986). Bellrose (1980) lists the Sandhills as the most important waterfowl production area outside the Prairie Pothole Region. The most common waterfowl nesting on the Refuge are mallard, blue-winged teal, northern shoveler, gadwall, Canada geese, and pintails. Trumpeter swans are a resident species.

Prairie grouse habitat and populations are being reduced significantly in North America (Proceedings Prairie Grouse Technical Conference 1998, Cornely and Braun 1997, Proceedings Minnesota Prairie Chicken Society 1998, Boydeck 1997, Boyce 1997, Hoffman and Beauprez 1997). Prairie chickens are of special concern. The Sandhills and Valentine NWR are important for conservation of both prairie chickens and sharp-tailed grouse and one of only a few places where there are significant populations of both species in the same area.

The riparian shorelines on Valentine NWR are primarily native willows which provide habitat for many neotropical migrants (Sedgewick 1993). The high water levels of the past 10-15 years have discouraged significant use by migrating shorebirds.

## Mammals

The Nebraska Sandhills provide two distinct land types, Sandhills and wet meadows, that support an abundant diversity of native mammals. The original native mammalian fauna probably comprised 59 species. Ten carnivores and ungulates were probably extirpated by the turn of the century. The remaining 49 native mammal species have been augmented by ten additional species introduced or whose ranges have been extended (Jones 1964, McDaniel 1967, Freeman 1990, and Bogan and Ramotnik 1993). One native species, the swift fox, is on the Federal Candidate Species List as well as the State Endangered Species List. The present range of occurrence of this species is within the region of Valentine NWR, but no recent sightings have been made.

### Amphibians and Reptiles

The Nebraska Sandhills are within the range of 26 to 27 species of amphibians and reptiles (Freeman 1990). Twenty-two species are relatively common on Valentine NWR, including 6 amphibians, 5 turtles, 4 lizards, and 7 snake species. The turtle fauna on Valentine NWR is rich in species with abundant populations (Corn et al. 1993) - especially the Blanding's turtle and the yellow mud turtle which are species of management concern. Of the seven snake species on Valentine NWR, only the milk snake and prairie rattlesnake do not occur in any significant numbers.

## Fish

More than 75 species of fish have been recorded in the Sandhills (Hrabik 1989) including a mix of native and introduced species. Most are fish of rivers and stream and thus not found on Valentine NWR. Native fish known to occur on the Refuge include grass pickerel, fathead minnow, brook stickleback, green sunfish, and bullhead. No complete survey of native fishes has been made.

Nonnative fish including northern pike, largemouth bass, bluegill, saugeye, yellow perch, and muskellunge are stocked and managed for sport fisheries in nine Refuge lakes open to fishing. In the past, black crappie, channel catfish, flathead catfish, Sacramento perch, and trout were introduced. The Refuge lakes are noted in Nebraska for fine bluegill and pike fishing and are a popular destination for anglers from Nebraska and other states. Under cooperative agreement, the Nebraska Game and Parks Commission collects brood stock and eggs from the Refuge lakes for their hatchery operations. They also stock fish in Refuge fishing lakes.

Carp entered the Refuge via the Gordon Creek diversion and have been a continual problem in Refuge lakes and wetlands. In recent years, high water levels have connected additional lakes, and carp are now found throughout the Refuge. In recent years, carp entered the Marsh Lakes, the best waterfowl and other water bird habitat on the Refuge. In the late 1970's and early 1980's, lakes open to fishing were treated with rotenone to reduce carp populations and improve sport fishing, water quality, and habitat for waterbirds. Restrictive size limits have been placed on northern pike to protect them as a predator of the carp. This has worked partially by keeping carp populations in control.

## Insects

Three insect species are on the list of species of management concern -- the regal fritillary butterfly, the Belfragi's chlorochroan bug, and the noctuid moth. However, systematic monitoring of the diverse insect life on and adjacent to Valentine NWR has not been done. In 1983, personnel from the Smithsonian Institute's Museum of Natural History, Washington, D.C., collected small moths on Valentine NWR and reported that a minimum of 25 species had not been previously described. The occurrence of the endangered American burying beetle is another case in point that insect life and range of occurrence of insects are not well documented throughout the Nebraska Sandhills.

## Threatened and Endangered Animals

The following rare and endangered species have been documented on Valentine NWR during spring and/or fall migrations: peregrine falcon, interior least tern, piping plover, and whooping crane. Most are only recorded at intervals of several years. Bald eagles are annual winter residents. Generally a maximum of six bald eagles are recorded during the winter survey. In late winter, up to 100 bald eagles have concentrated at fish kills both on and adjacent to the Refuge.

The American burying beetle was listed under the provisions of the Endangered Species Act in 1989. Before 1992, Valentine NWR was considered outside the previously known range of the American burying beetle. Six records of the species were documented in 1992, and in 1993, one specimen was photographed on Valentine NWR, and a second specimen was recovered from private land adjacent to Valentine NWR. A limited survey conducted in 1998 recorded eight beetles. However, grassland management on Valentine NWR that encourages the production of waterfowl and prairie grouse, (i.e., a potential carrion food source of appropriate size) (USFWS 1991), should enhance the survival of this species.

## Cultural Resources

No survey of historic resources has been conducted on the Refuge. No sites of Native American occupation are known. Before becoming a Refuge, the land was used for cattle ranching. The ranch headquarters area has little remaining. One house at Pelican Lake was part of a ranch and is now used for Refuge housing. Some remains of old waterfowl hunting camps can be seen around the Marsh Lakes. The Civilian Conservation Corps had a camp at Valentine NWR and most of the buildings at Hackberry Lake were built at this time. There are also two fire observation towers on the Refuge built by the CCCs. The CCCs had a resort at Dads Lake of which the foundations and chimney are still present. They also planted most of the tree belts found on the Refuge.

## Public Use

Valentine NWR is presently open to wildlife observation and photography, fishing, hunting, and environmental education and interpretation activities. A detailed discussion of current use levels and specific recreational activities is found in Alternatives, Current Management (No Action) Alternative in the Public Use section.

Facilities for visitors are limited. Most interior Refuge roads are two track trails which are often only passable in 4-wheel drive and often closed when water is high or snow is deep. Mowed parking areas are near primitive boat launches. One handicapped accessible fishing dock and surfaced boat ramp are at Watts Lake. Rest rooms are available in the summer only at Hackberry Lake. Three information kiosks with leaflet dispensers are at Refuge entrances. Refuge entrances and boundaries are marked with signs, and there are limited directional and regulation signs on the Refuge.

## Economic Environment

The Refuge is in Cherry County, approximately 25 miles south of the city of Valentine, the County seat and biggest town in the County, with a population of 2,800. Cherry County is the largest County in Nebraska with a total area of approximately 6,013 square miles. The Yellowthroat WMA is located in Brown County while Holt Creek WMA is located in Keya Paha County. The rural population is very sparse due to large ranch sizes. The economy of the area is based primarily on ranching and tourism. The Refuge contributes to the local economy primarily by attracting tourists, birdwatchers, hunters, and anglers. The permitting of some grazing and haying on Service lands benefits the local economy, as do the in-lieu-of-tax payments made to Cherry County for Service lands. Presently, nine ranchers have permits to graze and/or hay on the Refuge. The grazing permitted is an important part of their ranching operations.

Nebraska State Highway 83 cuts through the center of the Refuge and State Spur 16B goes to the west end of the Refuge. The nearest airport with scheduled passenger service is in North Platte, 136 miles south of Valentine.

Most of the land adjacent to the Refuge is in private ownership. The Nebraska Game and Parks Commission owns two Wildlife Management Areas, Rat and Beaver Lake WMA and Willow Lake WMA, adjacent to the Refuge. The State also owns four parcels of school land managed by Educational Lands and Funds which border the Refuge. Some School lands are scheduled to be sold in the future. Other public lands in the Sandhills include Merrit Reservoir State Recreation Area, Bowring Ranch, and the Cowboy Trail, and several additional WMAs managed by the Nebraska Game and Parks Commission; the McKelvie and Halsey National Forests managed by the U.S. Forest Service; and several small tracts managed by the Bureau of Land Management. The Nature Conservancy manages the large Niobrara Valley Preserve at the northern edge of the Sandhills.

## Special Designations

In 1973, a 16,317 acre portion of the Refuge surrounding Dads Lake was included as a Proposed Wilderness Area. The area is to be managed as wilderness until designation is completed or the proposal withdrawn. The boundaries of the proposed wilderness are shown in Figure 1, Vicinity Map.

Two research natural areas are located on Valentine NWR. They are called the George Wiseman Natural Area and Natural Area 2. They are south of Hackberry and Dewey Lakes, are a combined total of 1,381 acres in size, are closed to access, and have not been grazed by cattle.

In 1979, the special qualities of the Sandhills were recognized when Valentine NWR was designated a Registered Natural Landmark by the Heritage Conservation and Recreation Service.

## Environmental Consequences

### Alternative A. Current Management (No Action)

#### Natural Resource Consequences

This alternative, by maintaining the current grassland management strategies, will provide the greatest assurance that populations of waterfowl, prairie grouse, and other wildlife will be maintained. The current art and science of native grassland management to produce abundant populations of these species are as well developed on Valentine NWR as anywhere in the country. Quantities of undisturbed and rested cover are near ideal for maximum output of migratory birds and native prairie wildlife.

This abundance has been achieved by fine-tuning grassland management through placement of more than 327 fenced habitat units to enable specific management practices on small targeted areas. The Refuge has achieved considerable success in providing tall warm-season grass cover over most of the Refuge. A mosaic of grassland heights provides a diversity of bird and wildlife use.

#### Cultural Resource Consequences

This alternative maintains the current information base and minimum interpretation of prehistoric and historic resources. The Refuge has not had funds to conduct a cultural survey of the Refuge.

#### Public Use Consequences

This alternative maintains the existing public uses on the Refuge. It, therefore, has the least impact on Refuge users because they know what the existing recreational opportunities are. This alternative provides for approximately 8,000 to 17,000 fishing visits on the Refuge, and 1,500 to 3,000 hunting and wildlife observation and photography visits.

As none of these public uses are controlled other than by area, it is believed that this level of use satisfies current demand for these activities. This alternative does not allow increased effort on providing environmental education activities, increased interpretation, and the public greater access to Refuge staff.

## Socio-Economic Consequences

This alternative maintains the current management regime and therefore the current amount of economic use of the Refuge would be maintained.

This alternative does not increase infrastructure investment in the Refuge, nor does it increase the staffing level on the Refuge. The lack of these increases does not take anything away from the local economy. It also does not add any extra opportunities.

By maintaining public use at existing levels, the current tourism boost to the local economy from the Refuge remains the same.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off refuge onto adjacent private land. The refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that is necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

## Alternative B. Historical

### Natural Resources Consequences

This alternative changes the current grassland management of the Refuge from an intensive holistic short duration/high intensity regime using permittee cattle to a more natural regime utilizing bison, a native herbivore. Up to 500 head of bison utilizing approximately 7,200 AUMs, when the Refuge is fully fenced, would replace eight permittee herds grazing approximately 6,600 AUMs primarily during spring and summer months. To accomplish this, a bison proof electric fence would need to be constructed on the outside boundary of the Refuge, and nearly all interior fences would be removed. No haying would be conducted on Valentine NWR under this alternative.

Prescribed fire activities will increase to provide cedar control, to influence use areas by bison by providing more nutritious and palatable regrowth that is very successful in influencing their feeding areas, and to invigorate grasslands in areas that receive almost no grazing use.

The impact on prairie grouse, migratory waterfowl, and other migratory birds differs from species to species and will depend upon the degree of use of the Refuge by bison. By controlling bison numbers, the Refuge staff will be able to maintain nearly the same level of forage removal as with domestic cattle. Interspecific competition for breeding areas between bison and waterfowl and prairie grouse will probably occur. During their breeding season, birds generally avoid large animal use areas. It is believed that the areas utilized by the bison herd(s) during the summer months will represent only a small portion of the Refuge; thus, the overall bird productivity will be only slightly affected, and the grassland objectives of rest and undisturbed cover will continue to be achieved.

Because of the mosaic of grassland conditions that bison will provide, it is anticipated that migratory bird use may increase. Some species adapted to open, short grazed areas, such as shorebirds, will be increased during migration and breeding periods. This alternative also calls for introduction of prairie dogs to the Refuge. Prairie dogs and their associated burrows and short grass environments provide a diverse habitat for prairie mammals, reptiles, birds, and insects.

This alternative would lower artificially high water levels by removing water control structures in some larger lakes on the Refuge. These lakes are currently being used for sport fishery management and would continue to be so. The lower, natural lake levels would increase the vulnerability of the fish species to winterkill. Eventually, those lakes with minimal depths would lose sport fishery capability.

### Cultural Resource Consequences

This alternative would seek to increase historical and prehistoric interpretation on the Refuge. This would most likely be provided by interpretation of overlooks such as the fire tower platform and other historic sites.

This alternative would not provide for a cultural survey on the Refuge, nor help cultural and historic interpretation through relocation of the headquarters to a site along Highway 83.

### Public Use Consequences

This alternative would affect existing public use in several ways. Currently, the major public use activity is fishing. This alternative would continue the number of lakes people can fish in. It would also allow removal of water control structures on fishing lakes, thereby lowering the lake's water level. If lakes then winterkilled, fishing opportunities would decrease. Overall, fishing success would probably decrease under this alternative, thus ultimately reducing this use on the Refuge. Historically, very few Sandhill lakes had any records of fish populations and, those that did, were not inhabited by sport fish currently sought after.

This alternative would not change any existing hunting program, and would add a Refuge guided hunt to help control bison surplus. Visitors can hunt and fish in areas in which bison may be present. This may at times create hazards for hunters, fisherman, and hikers. The Refuge will be operated like many national parks that have large animals. No guarantees of public safety will be made for people engaged in recreation in areas used by these animals. That is part of the "wildlife experience" and each person considering recreating in areas with these animals needs to consider their own abilities and base their decision to participate on their own risk assessment. Appropriate safety messages, educational efforts, and, perhaps at times, even closing off certain areas of the Refuge, should be a part of management of this Refuge if bison are reintroduced.

This alternative adds public use opportunity by allowing one concessionaire to provide access to the bison herd and conduct trail rides through the Refuge at certain times of the year. This activity is a new opportunity and would provide a new and unique way to enjoy the Refuge.

## Socio-Economic Consequences

This alternative would gradually phase out the economic advantages currently provided to local ranchers by not allowing permittee grazing on the Refuge. Compared to 1997, this would mean the eventual loss of approximately 6,000 AUM's to nine local ranch families. Cattle dependent on this forage would be lost to these ranchers or replacement forage would have to come from other sources. The Refuge would lose revenues generated by this activity to repair infrastructure such as wells, fences, and trails.

The reintroduction of bison on the Refuge may create increased tourism and recreational use as a result of the presence of this species. To the extent this occurred, area businesses would reap the benefits of increased sales of recreational supplies, food, gas, and lodging.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off refuge onto adjacent private land. The refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that are necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

## Alternative C. Intensive Wildlife Management

### Natural Resource Consequences

This alternative would generally maintain the current grassland management program on the Refuge; a small drop in forage use of 600 AUM's would occur. Other changes would be that approximately 1,500 AUM's of permittee cattle use would be replaced with Longhorn cattle from Fort Niobrara NWR. Because this herd would be under Refuge control, there would be increased capability to increase forage removal during April and May, and increased grazing pressure in fall and winter months. The percentage of rest and undisturbed cover would not change significantly from the current level; the Refuge will increase undisturbed cover to 60 percent, from 56 percent currently.

This alternative will increase the use of prescribed fire on the Refuge for cedar control and grassland invigoration. There will be a decrease in haying on the Refuge. These grassland management changes are not expected to significantly increase or decrease migratory waterfowl, prairie grouse, or other migratory and indigenous wildlife.

This alternative will introduce prairie dogs to suitable areas on the Refuge. The short grass and burrow systems created by prairie dogs increase biodiversity of mammals, reptiles, birds, and insects on prairie habitats. The Refuge will also increase its efforts to reestablish federally listed plants on the Refuge. Increased monitoring and coordinated research efforts to increase the knowledge base on how management practices affect blowout penstemon and western prairie fringed orchids will be conducted. Surveys for American burying beetle will also be conducted.

This alternative would reduce the number of lakes which are designated for sport fishery management. The Refuge would seek to enhance the remaining sport fishery lakes by increasing drawdowns and renovation to increase vegetation and insect productivity. These renovations would include restocking of sport fish.

### Cultural Resource Consequences

This alternative would increase interpretation of cultural and historic resources on the Refuge. It will do so by conducting a Refuge wide survey of prehistoric and historical resources. It will also seek to move the headquarters to Highway 83. This facility would have an opportunity for increased interpretation of these resources for the public.

### Public Use Consequences

This alternative would reduce the number of lakes open to fishing. The remaining lakes would be enhanced through periodic drawdowns and renovations to increase productivity. These renovations would include sport fish restocking. The net result on public fishing opportunity is expected to be very little. A smaller number of fishing lakes (from the present 9 to 7) would be open, but those that remain open are expected to be higher quality.

The Refuge hunting programs would remain the same. Increased opportunities for interpretation of Refuge resources will be provided by a more accessible headquarters along Highway 83. Staff availability to the public will increase as a result of this move.

### Socio-Economic Consequences

This alternative would reduce the current permittee grazing on the Refuge by approximately 1,500 AUM's. This forage would be removed by Longhorn cattle brought in from Fort Niobrara NWR. The ranchers losing the use of this forage would have to replace it elsewhere or downsize their cattle herd to accommodate the reduction.

This alternative would increase Refuge infrastructure investment due to the relocation of the headquarters; this investment would allow private contractors the opportunity to hire workers and perform the construction of the site and buildings. This alternative also adds some staff and increases the Refuge payroll. These jobs and salaries are multiplied through the community and enhance the overall local economic climate.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off refuge onto adjacent private land. The refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that are necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

## Alternative D. Modified Historic (Preferred Alternative)

### Natural Resource Consequences

This alternative will reintroduce bison to the Refuge. The Refuge will gradually phase in bison to the entire Refuge, at completion having a herd of 450 animals after sale. The herd will consume 6,480 AUM's, 480 more than currently being used. As bison are phased in, permittee cattle will be phased out. The Refuge will be fenced with bison proof fence at the boundaries and the majority of the interior fence will be removed. Prescribed fire will increase on the Refuge as a means to influence bison areas of use, invigorate grassland that receives very little use, and to reduce cedar invasion of grasslands. Haying will gradually be reduced from the current acreage of 700.

Nonnative grasses such as smooth brome and Kentucky bluegrass will probably increase as grazing treatments using bison will be less precise than current management using cattle. The increase of these grasses will reduce the vigor of native warm season grasses preferred as nesting cover by waterfowl, grouse and some other species of grassland birds.

It is anticipated that bison activity will create a mosaic of grassland conditions, with some areas being heavily grazed, others moderately grazed and others unused. This mosaic should actually increase the overall diversity of the bird population on the Refuge by allowing greater grassland song bird use and increasing migratory use by all species of birds. This alternative also seeks to introduce prairie dogs to the Refuge. The burrows of prairie dogs increase mammal, bird, reptile, and insect diversity on prairies, and should on Valentine NWR as well.

This alternative also increases the level of effort spent on reestablishing blowout penstemon on the Refuge; increases research on management practices that facilitate expansion on Western prairie fringed orchids; and conducts surveys for American burying beetles. These efforts will enhance federally listed species' protection on the Refuge.

### Cultural Resource Consequences

This alternative will increase the level of interpretation of prehistoric and historic resources on the Refuge. It will do so by conducting a Refuge-wide survey of prehistoric and historical resources. It will also seek to move the headquarters to Highway 83. This facility would increase interpretation opportunities of these resources to the public.

### Public Use Consequences

This alternative will maintain the current sport fishery program, with nine lakes open to fishing. No expansion into other lakes on the Refuge will be allowed. The Refuge will seek to conduct drawdowns and renovations of these and other lakes to increase vegetative and aquatic insect productivity. In the case of sport fishing lakes, these renovations will include restocking of sport fish.

This alternative does not change any existing hunting programs except to close 160 acres adjacent to the Hackberry CCC fire tower. The public will be able to hunt and fish in areas that bison may be present in. If elk are reintroduced, a limited controlled hunt for this species will be offered if herd size allows. Bison may at times create hazards for hunters, anglers, and hikers. The Refuge will be operated like many national parks that have large animals. No guarantees of public safety will be made for people engaged in recreation in areas used by these animals. That is part of the "wildlife experience" and each person considering recreating in areas with these animals needs to consider their own abilities and base their decision to participate on their own risk assessment. Appropriate safety messages, educational efforts, and, perhaps at times, even closing off certain areas of the Refuge, should be a part of management of this Refuge if bison are reintroduced.

This alternative adds public use opportunity by allowing one concessionaire to provide access to the bison herd and conduct trail rides through the Refuge at certain times of the year. This activity is a new opportunity and would provide a new and unique way to enjoy the Refuge.

This alternative includes enhancement of the existing fire tower overlook and establishment of a hiking trail accessing the tower. By establishing a headquarters along Highway 83, the public will have greater access to Refuge staff and greater access to all Refuge public use programs.

## Socio-Economic Consequences

This alternative would gradually phase out the economic advantages currently provided by allowing permittee grazing on the Refuge. Comparing to 1997, this would mean the eventual loss of approximately 6,000 AUM's to nine local ranch families. This forage would be lost to these ranchers or replacement forage would have to come from other sources. The Refuge would lose revenues generated by this activity to repair infrastructure such as wells, fences, and trails.

This alternative would increase Refuge expenditures on infrastructure. Implementation of the preferred alternative would add to the local economy as needed supplies are purchased and contractors hired to complete proposed projects.

This alternative does not reduce the current work effort required by existing Refuge activities, and adds a significant number of new work activities. To address that need, the Refuge Complex will have to add personnel. Salaries of additional staff will add to the overall local economy.

This alternative would have a positive effect through provision for a concessionaire to provide tours to the main herds. This will allow a local entrepreneur the opportunity to start a new business.

The introduction of bison on the Refuge may expand tourism and recreational use as a result of the presence of this species on Valentine NWR. To the extent this occurred, area businesses would reap the benefits of increased sales of recreational supplies, food, gas, and lodging.

The Fort Niobrara/Valentine NWR Complex has long been an important contributor to the economy, recreation, and social atmosphere of Cherry County. Choices made by this alternative recognize that relationship, and the future Refuge activities and programs will continue to contribute in a positive way to the area and its people.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off refuge onto adjacent private land. The Refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that are necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

## List of Preparers

This document is a compilation of efforts by several Service people. The Core Planning Team consisted of Jon Kauffeld (Regional Office Planner), Kathy McPeak (Wildlife Biologist), Mark Lindvall (Refuge Operations Specialist), Jim Sellers (Refuge Operations Specialist), Jim Kelton (Fire Management Officer), Len McDaniel (Wildlife Biologist), and Doug Staller (Regional Public Use Specialist) and was responsible for gathering and preparing the information.

Royce Huber (Refuge Manager), Wayne King (Regional Wildlife Biologist), Bob Nagel (Refuge Supervisor), Larry Shanks (Refuge Supervisor), and Carol Taylor (Regional Office Planning Supervisor) provided guidance and assisted with review and editing.

Rhoda Lewis (Regional Archaeologist), Stephanie Jones (Regional Non-game Bird Biologist), and Cheryl Willis (Water Resource Specialist) provided technical expertise. Jaymee Fojtik (GIS Coordinator) prepared the various maps.

Barb Shupe (Regional Writer/Editor) compiled the document and completed all desktop publishing aspects of the document and Melvie Uhland (Regional Office) produced the cover. Bernardo Garza (Regional Office Planner) later helped in the editing and replaced Jon Kauffeld.

## Consultation and Coordination with Others

Planning Process, Planning Time Frame and Future Revisions documented the procedure used to involve the public, and the opportunities that were available for participation. This section will generally list the types of comments that plan preparers were made aware of during the process by either written or verbal comment. No attempt is made to quantify the number of people making the comment, or within this document to identify individuals or organizations making specific comment. A mailing list of all persons that commented or requested notification is available at the end of the section.

### **Comments**

#### *Fishing on Valentine*

P improve the roads, don't improve the roads, trail roads are OK

P keep sport fishing lakes, open more lakes to fishing, don't increase number of lakes open to fishing

P allow use of motors, allow use of trolling motors only

P improve fish populations, change regulations

#### *Grassland Management*

P prescribed fire should be increased

P graze more on refuge, current level of grazing is OK

P need to control weeds better

P modify grazing seasons, and cost

#### *Access to Refuge*

P trail riding concessionaire potential exists

P maintain Pony Lake Road

#### *Big Game Management*

P put bison on Refuge

#### *Hunting*

P increase area open to waterfowl hunting

P open Refuge to turkey hunting

#### *Bird Management*

P do more predator control



Appendix A.  
Summary of Actions Proposed Under  
Management Alternatives

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
<b>Grassland Management</b>				
Concern over livestock grazing changes.	Livestock grazing would continue at current levels of approximately 6,600 AUMs.	Permittee cattle grazing would be phased out of the Refuge and bison would replace livestock.	Some permittee cattle grazing would be gradually reduced and replaced with longhorns from Fort Niobrara.	Permittee livestock grazing would be gradually reduced if bison are proven to achieve the desired habitat conditions. If habitat management is fully successful, bison would replace domestic livestock on the Refuge.
Reintroduce bison to Refuge.	Bison would not be reintroduced.	Bison would be reintroduced to the Refuge.	Bison would not be reintroduced.	Bison would be reintroduced to a portion of Valentine NWR. The effects of bison grazing on achieving wildlife habitat objectives would be monitored. If bison can be successfully used as the management tool of choice, bison would eventually replace domestic livestock.
Control weeds better.	Weed management would continue to utilize a holistic approach with preferred method of control being biological and grazing and chemicals being used when needed.	Weed control would primarily be conducted with biological agents and grazing.	Weed control will be conducted with biological agents and grazing with chemicals used as the last resort.	Weed management would be conducted with primarily biological agents and grazing. Chemicals would be used if necessary.
Concern over the use of prescribed fire.	Prescribed fire would continue to be utilized to a greater extent to meet management needs.	The use of prescribed fire would be increased with up to 8,000 acres burned annually to control cedar, distribute bison, invigorate grasses, and mimic historical conditions.	Prescribed fire would be increased up to 4,000 acres for reinvigorating grasslands and controlling red cedar.	Prescribed fire would be expanded to invigorate grasslands and change distribution of bison grazing.

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
<b>Endangered Species</b>				
Endangered species monitoring.	Limited monitoring occurs. Continue blowout penstemon transplants.	Monitor effects of bison reintroduction and prescribed burns on T&E species. Continue blowout penstemon transplants.	Monitor and conduct applied research to find ways to increase numbers. Transplant blowout penstemon to suitable sites.	Monitor and conduct applied research to find ways to increase numbers. Increase transplants of blowout penstemon.
<b>Wildlife Management</b>				
Introduction of prairie dogs.  Monitoring of wildlife and habitats.  Predator control	Prairie dogs have not been introduced.  Limited monitoring of wildlife and habitats  Coyote hunting would be allowed to continue and limited control of predators on islands would continue.	Attempt to introduce prairie dogs.  Monitoring increased to include bison and effects of bison grazing and fire.  Predators would not be controlled on the Refuge.	Attempt to introduce prairie dogs.  Monitoring to include more species of wildlife.  Predator control would continue and be intensified in prime nesting areas.	Attempt to introduce prairie dogs.  Monitoring focused on effects of fire and bison on habitat.  Control of coyotes would continue and limited control of predators on nesting islands would continue.

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
<b>Public Use</b>				
Concern that fishing will be changed, (either increase or decrease).	Fishing activities would continue at current levels.	Fishing could decline as water levels in lakes would be allowed to fluctuate without control resulting in increased winter kill.	Sportfishing opportunities will be reduced as some lakes currently open to fishing will be closed. Lake renovations will focus on food production for waterbirds.	The current sportfishing program would be continued on the nine lakes open to fishing.
Concern that hunting practices will change and more areas open for waterfowl and turkey hunting.	Hunting activities would continue at current levels.	Refuge hunting plans would continue at current levels. Bison hunts for herd reduction.	The current hunting program would continue; however, if the number of hunters increased, some limit to the number of hunters would be considered.	The current hunting program would continue except to close 160 acres adjacent to Hackberry CCC Fire Tower.
Access roads conditions.	Access roads will continue to receive minor maintenance and some improvements will occur when funding is available.	Access roads would remain primitive and no major improvements would occur.	Access roads would be marginally maintained and no significant improvements to the road system would occur.	Access roads would continue to be maintained and improvement would occur as funding levels allow.
Opportunity for concessionaires if bison are reintroduced.	Concessionaires would not be needed as the current public use activities would continue without an increase in number of visitors.	Bison would be reintroduced and eventually replace livestock as the primary herbivore in the Refuge. Concessionaire for viewing of bison would be encouraged.	Bison would not be reintroduced; however, longhorns from Fort Niobrara would be added as grazing animals. A concessionaire would be considered if public demand existed.	A concessionaire would be considered to provide access and interpretation of the bison herd.
<b>Partnerships</b>				
Partnerships for the Refuge.	Existing partnerships continued.	Partnerships for bison management will be sought out.	Seek to increase partnerships. Seek limited land trades and acquisition from willing owners.	Seek partners to implement alternative. Seek limited land trades and acquisition from willing owners.

Appendix B.  
Valentine National Wildlife Refuge Species Lists

Birds

**Loons**

Common Loon *Gavia immer*

**Grebes**

Pied-billed Grebe *Podilymbus podiceps*  
Horned Grebe *Podiceps auritus*  
Eared Grebe *Podiceps nigricollis*  
Western Grebe *Aechmophorus occidentalis*  
Clark's Grebe *Aechmophorus clarkii*

**Pelicans**

American White Pelican *Pelecanus erythrorhynchos*  
Brown Pelican *Pelecanus occidentalis*

**Cormorants**

Double-crested Cormorant *Phalacrocorax auritus*

**Bitterns, Herons**

American Bittern *Botaurus lentiginosus*  
Least Bittern *Ixobrychus exilis*  
Great Blue Heron *Ardea herodias*  
Great Egret *Ardea alba*  
Snowy Egret *Egretta thula*  
Little Blue Heron *Egretta caerulea*  
Cattle Egret *Bubulcus ibis*  
Green Heron *Butorides virescens*  
Black-crowned Night-Heron *Nycticorax nycticorax*

**Ibis, Stork**

White-faced Ibis *Plegadis chihi*

**Vultures**

Turkey Vulture *Cathartes aura*

**Geese**

Greater White-fronted Goose *Anser albifrons*  
Snow Goose *Chen caerulescens*  
Canada Goose *Branta canadensis*

**Swans**

Trumpeter Swan *Cygnus buccinator*  
Tundra Swan *Cygnus columbianus*

**Ducks**

Wood Duck *Aix sponsa*  
Gadwall *Anas strepera*  
Eurasian Wigeon *Anas penelope*  
American Wigeon *Anas americana*  
American Black Duck *Anas rubripes*  
Mallard *Anas platyrhynchos*  
Blue-winged Teal *Anas discors*  
Cinnamon Teal *Anas cyanoptera*  
Northern Shoveler *Anas clypeata*  
Northern Pintail *Anas acuta*  
Green-winged Teal *Anas crecca*  
Canvasback *Aythya valisineria*  
Redhead *Aythya americana*  
Ring-necked Duck *Aythya collaris*  
Greater Scaup *Aythya marila*  
Lesser Scaup *Aythya affinis*  
Harlequin Duck *Histrionicus histrionicus*  
Bufflehead *Bucephala albeola*  
Common Goldeneye *Bucephala clangula*  
Barrow's Goldeneye *Bucephala islandica*  
Hooded Merganser *Lophodytes cucullatus*  
Common Merganser *Mergus merganser*  
Red-breasted Merganser *Mergus serrator*  
Ruddy Duck *Oxyura jamaicensis*

**Hawks, Kites, Eagles**

Osprey *Pandion haliaetus*  
Bald Eagle *Haliaeetus leucocephalus*  
Northern Harrier *Circus cyaneus*  
Sharp-shinned Hawk *Accipiter striatus*  
Cooper's Hawk *Accipiter cooperii*  
Northern Goshawk *Accipiter gentilis*  
Red-shouldered Hawk *Buteo lineatus*  
Broad-winged Hawk *Buteo platypterus*  
Swainson's Hawk *Buteo swainsoni*  
Red-tailed Hawk *Buteo jamaicensis*  
Ferruginous Hawk *Buteo regalis*  
Rough-legged Hawk *Buteo lagopus*  
Golden Eagle *Aquila chrysaetos*

**Falcons**

American Kestrel *Falco sparverius*  
Merlin *Falco columbarius*  
Gryfalcon *Falco rusticolus*  
Peregrine Falcon *Falco peregrinus*  
Prairie Falcon *Falco mexicanus*

**Gallinaceous Birds**

Gray Partridge *Perdix perdix*  
Ring-necked Pheasant *Phasianus colchicus*  
Sharp-tailed Grouse *Tympanuchus phasianellus*  
Greater Prairie-Chicken *Tympanuchus cupido*  
Wild Turkey *Meleagris gallopavo*  
Northern Bobwhite *Colinus virginianus*

**Rails, Gallinules**

Yellow Rail	<i>Coturnicops noveboracensis</i>
Black Rail	<i>Laterallus jamaicensis</i>
Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
Common Moorhen	<i>Gallinula chloropus</i>
American Coot	<i>Fulica americana</i>

**Cranes**

Sandhill Crane	<i>Grus canadensis</i>
Whooping Crane	<i>Grus americana</i>

**Plovers**

Black-bellied Plover	<i>Pluvialis squatarola</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Piping Plover	<i>Charadrius melodus</i>
Killdeer	<i>Charadrius vociferus</i>

**Stilt, Avocet**

American Avocet	<i>Recurvirostra americana</i>
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**Sandpipers**

Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Long-billed Curlew	<i>Numenius americanus</i>
Hudsonian Godwit	<i>Limosa haemastica</i>
Marbled Godwit	<i>Limosa fedoa</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Red Knot	<i>Calidris canutus</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Dunlin	<i>Calidris alpina</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Common Snipe	<i>Gallinago gallinago</i>

**Phalaropes**

Wilson's Phalarope	<i>Phalaropus tricolor</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>

**Gulls**

Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull	<i>Larus philadelphus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
California Gull	<i>Larus californicus</i>
Herring Gull	<i>Larus argentatus</i>

**Terns**

Caspian Tern	<i>Sterna caspia</i>
Common Tern	<i>Sterna hirundo</i>
Forster's Tern	<i>Sterna forsteri</i>
Least Tern	<i>Sterna antillarum</i>
Black Tern	<i>Chlidonias niger</i>

**Pigeons, Doves, Parakeet**

Mourning Dove	<i>Zenaida macroura</i>
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**Cuckoos**

Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>

**Owls**

Eastern Screech Owl	<i>Otus asio</i>
Great Horned Owl	<i>Bubo virginianus</i>
Snowy Owl	<i>Nyctea scandiaca</i>
Burrowing Owl	<i>Athene cunicularia</i>
Barred Owl	<i>Strix varia</i>
Long-eared Owl	<i>Asio otus</i>
Short-eared Owl	<i>Asio flammeus</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>

**Goatsuckers**

Common Nighthawk	<i>Chordeiles minor</i>
Common Poorwill	<i>Phalaenoptilus nuttallii</i>

**Swifts**

Chimney Swift	<i>Chaetura pelagica</i>
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**Hummingbirds**

Ruby-throated Hummingbird	<i>Archilochus colubris</i>
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**Kingfisher**

Belted Kingfisher	<i>Ceryle alcyon</i>
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**Woodpeckers**

Lewis' Woodpecker	<i>Melanerpes lewis</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Northern Flicker	<i>Colaptes auratus</i>

**Flycatchers**

Western Wood-Pewee	<i>Contopus sordidulus</i>
Willow Flycatcher	<i>Empidonax traillii</i>
Least Flycatcher	<i>Empidonax minimus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Say's Phoebe	<i>Sayornis saya</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>

**Shrikes**

Loggerhead Shrike	<i>Lanius ludovicianus</i>
Northern Shrike	<i>Lanius excubitor</i>

**Vireo**

Bell's Vireo	<i>Vireo bellii</i>
Warbling Vireo	<i>Vireo gilvus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>

**Jays, Magpies, Crows, Ravens**

Blue Jay	<i>Cyanocitta cristata</i>
Black-billed Magpie	<i>Pica pica</i>
American Crow	<i>Corvus brachyrhynchos</i>

**Lark**Horned Lark *Eremophila alpestris***Swallows**Tree Swallow *Tachycineta bicolor*Northern Rough-winged Swallow *Stelgidopteryx serripennis*Bank Swallow *Riparia riparia*Cliff Swallow *Petrochelidon pyrrhonota*Barn Swallow *Hirundo rustica***Chickadees, Titmice, Verdin, Bushtit**Black-capped Chickadee *Poecile atricapillus***Nuthatches**Red-breasted Nuthatch *Sitta canadensis*White-breasted Nuthatch *Sitta carolinensis*Pygmy Nuthatch *Sitta pygmaea***Creepers**Brown Creeper *Certhia americana***Wrens, Dipper**House Wren *Troglodytes aedon*Winter Wren *Troglodytes troglodytes*Sedge Wren *Cistothorus platensis*Marsh Wren *Cistothorus palustris***Kinglets**Golden-crowned Kinglet *Regulus satrapa*Ruby-crowned Kinglet *Regulus calendula***Thrushes, Bluebirds**Eastern Bluebird *Sialia sialis*Mountain Bluebird *Sialia currucoides*Townsend's Solitaire *Myadestes townsendi*Veery *Catharus fuscescens*Gray-cheeked Thrush *Catharus minimus*Swainson's Thrush *Catharus ustulatus*Hermit Thrush *Catharus guttatus*Wood Thrush *Hylocichla mustelina*American Robin *Turdus migratorius***Thrashers**Gray Catbird *Dumetella carolinensis*Northern Mockingbird *Mimus polyglottos*Brown Thrasher *Toxostoma rufum***Starling**European Starling *Sturnus vulgaris***Pipits**American (Water) Pipit *Anthus rubescens***Waxwings**Bohemian Waxwing *Bombycilla garrulus*Cedar Waxwing *Bombycilla cedrorum***Warblers**Blue-winged Warbler *Vermivora pinus*Golden-winged Warbler *Vermivora chrysoptera*Tennessee Warbler *Vermivora peregrina*Orange-crowned Warbler *Vermivora celata*Nashville Warbler *Vermivora ruficapilla*Yellow Warbler *Dendrocia petechia*Yellow-rumped Warbler *Dendrocia coronata*Black-throated Gray Warbler *Dendroica nigrescens*Blackburnian Warbler *Dendrocia fusca*Palm Warbler *Dendrocia palmarum*Bay-breasted Warbler *Dendrocia castanea*Blackpoll Warbler *Dendrocia striata*Black-and-white Warbler *Mniotilta varia*American Redstart *Setophaga ruticilla*Prothonotary Warbler *Protonotaria citrea*Ovenbird *Seiurus aurocapillus*Northern Waterthrush *Seiurus aurocapillus*MacGillivray's Warbler *Oporornis philadelphia*Common Yellowthroat *Oporornis tolmiei*Wilson's Warbler *Geothlypis trichas*Canada Warbler *Wilsonia pusilla*Yellow-breasted Chat *Wilsonia canadensis**Icteria virens***Tanagers**Summer Tanager *Piranga rubra*Scarlet Tanager *Piranga olivacea*Western Tanager *Piranga ludoviciana***Towhee, Sparrows**Eastern Towhee *Pipilo erythrophthalmus*American Tree Sparrow *Spizella arborea*Chipping Sparrow *Spizella passerina*Clay-colored Sparrow *Spizella pallida*Field Sparrow *Spizella pusilla*Vesper Sparrow *Pooecetes gramineus*Lark Sparrow *Chondestes grammacus*Lark Bunting *Calamospiza melanocorys*Savannah Sparrow *Passerculus sandwichensis*Grasshopper Sparrow *Ammodramus savannarum*Baird's Sparrow *Ammodramus bairdii*Henslow's Sparrow *Ammodramus henslowii*Le Conte's Sparrow *Ammodramus leconteii*Nelson's Sharp-tailed Sparrow *Ammodramus nelsini*Fox Sparrow *Passerella iliaca*Song Sparrow *Melospiza melodia*Lincoln's Sparrow *Melospiza lincolni*Swamp Sparrow *Melospiza georgiana*White-throated Sparrow *Zonotrichia albicollis*Harris' Sparrow *Zonotrichia querula*White-crowned Sparrow *Zonotrichia leucophrys*Dark-eyed Junco *Junco hyemalis*McCown's Longspur *Calcarius mccownii*Lapland Longspur *Calcarius lapponicus*Chestnut-collared Longspur *Calcarius ornatus*

**Grosbeaks, Buntings**

Northern Cardinal	<i>Cardinalis cardinalis</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Blue Grosbeak	<i>Guiraca caerulea</i>
Lazuli Bunting	<i>Passerina amoena</i>
Indigo Bunting	<i>Passerina cyanea</i>
Dickcissel	<i>Spiza americana</i>

**Blackbirds, Orioles**

Bobolink	<i>Dolichonyx oryzivorus</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>

Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Orchard Oriole	<i>Icterus spurius</i>
Baltimore Oriole	<i>Icterus galbula</i>

**Finches**

Purple Finch	<i>Carpodacus purpureus</i>
House Finch	<i>Carpodacus mexicanus</i>
Red Crossbill	<i>Loxia curvirostra</i>
Common Redpoll	<i>Carduelis flammea</i>
Pine Siskin	<i>Carduelis pinus</i>
American Goldfinch	<i>Carduelis tristis</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>

**Old World Sparrow**

House Sparrow	<i>Passer domesticus</i>
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**Mammals:**

Virginia Opossum	<i>Didelphis virginiana</i>
Masked Shrew	<i>Sorex cinereus</i>
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>
Least Shrew	<i>Cryptotis parva</i>
Eastern Mole	<i>Scalopus aquaticus</i>
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
White-tailed Jackrabbit	<i>Lepus townsendii</i>
Woodchuck	<i>Marmota monax</i>
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
Eastern Fox Squirrel	<i>Sciurus niger</i>
Plains Pocket Gopher	<i>Geomys bursarius</i>
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>
Beaver	<i>Castor canadensis</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Plains Harvest Mouse	<i>Reithrodontomys montanus</i>
White-footed Mouse	<i>Peromyscus leucopus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
House Mouse	<i>Mus musculus</i>
Prairie Vole	<i>Microtus ochrogaster</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>
Common Muskrat	<i>Ondatra zibethicus</i>
Meadow Jumping Mouse	<i>Zapus hudsonius</i>
Common Porcupine	<i>Erethizon dorsatum</i>
Coyote	<i>Canis latrans</i>

Gray Fox	<i>Canis lupus</i>
Common Raccoon	<i>Procyon lotor</i>
Long-tailed Weasel	<i>Mustela frenata</i>
Least Weasel	<i>Mustela nivalis</i>
Mink	<i>Mustela vison</i>
American Badger	<i>Taxidea taxus</i>
Striped Skunk	<i>Mephitis mephitis</i>
Bobcat	<i>Lynx rufus</i>
Elk	<i>Cervus elaphus</i>
Mule Deer	<i>Odocoileus hemionus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Moose	<i>Alces alces</i>
Pronghorn	<i>Antilocapra americana</i>

**Amphibians and Reptiles:**

Tiger Salamander	<i>Ambystoma tigrinum</i>
Woodhouse's Toad	<i>Bufo woodhousii</i>
Plains Spadefoot	<i>Spea bombifrons</i>
Western Chorus Frog	<i>Pseudacris triseriata</i>
Bullfrog	<i>Rana catesbeiana</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Painted Turtle	<i>Chrysemys picta</i>
Blanding's Turtle	<i>Emydoidea blandingii</i>
Yellow Mud Turtle	<i>Kinosternon flavescens</i>
Ornate Box Turtle	<i>Terrapene ornata</i>
Prairie Racerunner	<i>Cnemidophorus sexlineatus</i>
Lesser Earless Lizard	<i>Holbrookia maculata</i>
Many-lined Skink	<i>Eumeces multivirgatus</i>
Northern Prairie Lizard	<i>Sceloporus undulatus</i>
Eastern Yellow-bellied Racer	<i>Coluber constrictor</i>
Plains Hognose Snake	<i>Heterodon platyrinos</i>
Pale Milk Snake	<i>Lampropeltis triangulum</i>
Bullsnake	<i>Pituophis catenifer</i>
Plains Garter Snake	<i>Thamnophis radix</i>
Red-sided Garter Snake	<i>Thamnophis sirtalis</i>
Prairie Rattlesnake	<i>Crotalus viridis</i>

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Appendix D.  
Section 7

Intra-Service Section 7 Consultation has been initiated with the Grand Island Field Office and will be completed prior to final approval of this Plan.



## Appendix E. Glossary

AUM: animal unit month, forage sufficient to sustain a 1,000 pound cow for one month during the normal range season

Prairie Grouse: both sharp-tailed grouse and prairie chickens

Wetland: includes lakes, marshes, temporary wetlands, fens, rivers, and creeks but not subirrigated meadows

Wildland: lands characterized by natural vegetation and landscapes where man-made structures and alterations are not evident



## Appendix F. Key Legislation/Policies

**Antiquities Act (1906):** Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

**Migratory Bird Treaty Act (1918):** Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

**Migratory Bird Conservation Act (1929):** Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

**Migratory Bird Hunting and Conservation Stamp Act (1934):** Authorized the opening of part of a refuge to waterfowl hunting.

**Fish and Wildlife Act (1956):** Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

**Fish and Wildlife Coordination Act (1958):** Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

**Refuge Recreation Act (1962):** Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

**Land and Water Conservation Fund Act (1965):** Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

**National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act):** Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

**National Historic Preservation Act (1966) as amended:** Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

**Architectural Barriers Act (1968):** Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

**National Environmental Policy Act (1969):** Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

**Endangered Species Act (1973):** Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

**Rehabilitation Act (1973):** Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

**Archaeological and Historic Preservation Act (1974):** Directs the preservation of historic and archaeological data in Federal construction projects.

**Clean Water Act (1977):** Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

**Executive Order 11988 (1977):** Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

**American Indian Religious Freedom Act (1978):**

Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

**Archaeological Resources Protection Act (1979) as amended:**

Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

**Emergency Wetlands Resources Act (1986):** The purpose of the Act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

**Federal Noxious Weed Act (1990):** Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other Federal and State agencies.

**Native American Graves Protection and Repatriation Act (1990):** Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

**Americans With Disabilities Act (1992):** Prohibits discrimination in public accommodations and services.

**Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996):** Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

**Executive Order 13007 Indian Sacred Sites (1996):** Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

## Appendix G. Mailing List of Agencies and Individuals

### Federal Officials

- P U.S. Senator Bob Kerry  
Doug Durry, Jr. Leg. Ass't, Omaha, NE
- P U.S. Senator Charles Hagel  
Doug Lamude, Leg. Ass't., Omaha, NE
- P U.S. Representative Bill Barrett  
Mark Whitacre, Leg. Director, Grand Island, NE  
Greg Beam, Bill Barrett's Office

### Federal Agencies

- P USDA/APHIS, Dr. Kathleen Akin, Lincoln, NE
- P USDA/Forest Service, Gregg Schenbeck
- P USDA/Natural Resource Conservation Service
- P USDI/Fish and Wildlife Service, Denver, CO;  
Albuquerque, NM; Portland, OR; Anchorage,  
AK; Fort Snelling, MN; Atlanta, GA; Hadley,  
MA; Washington, D.C.
- P USDI/Fish and Wildlife Service, Lacreek NWR,  
Martin, SD; National Bison Range, Moiese, MT;  
Witchita Mountains NWR, Indianola, OK;  
Crescent Lake NWR, Scottsbluff, NE; Rainwater  
Basin NWR, Kearney, NE Ecological Services,  
Grand Island, NE
- P USDI/NPS, Niobrara/Missouri Natl. Scenic  
River, Paul Hedren
- P USGS/National Wildlife Health Center, Dr.  
Thomas Raffae, Bozeman, MT

### State Officials

- P Governor Mike Johanns, Lincoln, NE
- P Senator Jim Jones, Lincoln, NE

### State Agencies

- P Department of Agriculture, Chadron, NE
- P Middle Niobrara NRD, Robert F. Hilske
- P NE Game & Parks Commission, Bill Vodehnal
- P NE Game & Parks Commission, Joel Klammer
- P NE Game & Parks, Valentine Fish Hatchery
- P State Historic Preservation Officer, Lawrence  
Sommer, Lincoln, NE

### City/County/Local Governments

- P Melvin Christensen, Cherry County Sheriff
- P Dean Jacobs, Valentine Chamber of Commerce
- P Rick Medena, City Manager-Valentine
- P Valentine City Council
- P Brown County Commissioners
- P Keya Paha County Commissioner
- P Cherry County Commissioners

### Libraries

- P Valentine Public Library
- P Ainsworth Public Library

### Organizations

- P Audubon Society, Dave Sands
- P Central Mountain and Plains Section of the  
Wildlife Society:
  - Dr. Rick Baydack, Winnipeg, MB
  - Dr. Carolyn Hull-Sieg, Rapid City, SD
  - Joe Hyland, Lincoln, NE
  - Jeff Nichols, Ogallala, NE
  - Dr. Gary Packard, Ft. Collins, CO
  - Dr. Pat Reece, Scottsbluff, NE
  - Tom Rider, Lander, WY
  - Dr. Terry Riley, Aberdeen, SD
  - Dr. Dan Svedarsky, Crookston, MN
- P Cherry County Pheasants Forever, Valentine, NE
- P Cooperative Alliance for Refuge Enhancement  
(CARE), Washington, D.C.
- P Fort Niobrara Natural History Association,  
Valentine, NE
- P Great Plains Buffalo Association
- P Intertribal Bison Cooperative, Tony Willman
- P Midcontinent Eco. Science Center, Fritz Knopf
- P National Bison Association
- P National Wildlife Refuge Assc., Washington, D.C.
- P The Nature Conservancy, Al Steuter
- P Nebraska Branch for Holistic Management
- P Nebraska Cattleman, Troy Bredenkamp
- P Nebraska Chapter of the American Fisheries  
Society, Lincoln, NE
- P Nebraska Chapter TWS, Carl Wolfe
- P Nebraska State Buffalo Assoc, Dave Hutchinson
- P Nebraska State Buffalo Assoc, Larry Mason
- P Nebraska Wildlife Federation, Lincoln, NE
- P Niobrara Canoe Outfitters Assoc., Roy  
Breuklander
- P Niobrara Council:
  - Nola Moosman, Recreation Rep, Valentine, NE
  - Dwight Sawle, Forestry Rep, Springview, NE
  - Brad Arrowsmith, Keya Paha, Bassett, NE
  - Harlin Welch, Brown County, Ainsworth, NE
  - Paul L. Hedren, National Park Service, O'Neill,  
NE
  - Tom Higgins, Newport, NE
  - Warren Arganbright, Valentine, NE
  - Jim Van Winkle, Cherry County Commissioner,  
Valentine, NE
  - Bill Mulligan, Middle Niobrara NRD, Valentine,  
NE
  - Jim Harlin, Rock County, Bassett, NE
  - Betty Palmer, Keya Paha County  
Commissioner, Springview, NE
  - Lloyd Alderman, Rock County Commiossioner,  
Newport, NE
  - Larry Voecks, Nebraska Game & Parks,  
Norfolk, NE
  - Betty Hermsmeyer, Brown County  
Commissioner, Ainsworth, NE

- P Rocky Mountain Elk Foundation, Pratt, KS
- P Sandhills Task Force, Kearney, NE
- P Texas Longhorn Breeders Assoc, Tim Miller
- P Texas Longhorn Trails, Carolyn Hunter
- P Wilderness Society, Washington, D.C.
- P Wilderness Watch, Missoula, MT

## Newspapers

- P Ainsworth Star-Journal, Ainsworth, NE
- P Associated Press, Omaha, NE
- P The Chadron Record, Chadron, NE
- P Grand Island Daily Independent, Grand Island, NE
- P Journal-Star Printing, Lincoln, NE
- P The Kearney Daily Hub, Kearney, NE
- P Lincoln Star, Lincoln, NE
- P The Midland News, Valentine, NE
- P The Norfolk Daily News, Norfolk, NE
- P North Platte Telegraph, North Platte, NE
- P Omaha-World Herald, Omaha, NE
- P The Outdoorsmen, Hartington, NE
- P Rock County Leader, Bassett, NE
- P Springview Herald, Springview, NE
- P United Press International, Omaha, NE

## Universities/Colleges

- P Dr. Tom Bragg, Department of Biology, UNO
- P Ken Higgins, SD Coop Unit, SDSU, Brookings
- P Mark Morgan, KSU, Dept of Horticulture,  
Forestry, & Recreation, Manhattan, KS
- P Dr. James Stubbendieck, Dept. of Agronomy,  
University of NE
- P Dr. Joe Templeton, Dept. of Veterinary  
Pathobiology, Texas A&M

## Individuals

- Adamson, Mark
- Allen, Dave
- Badura, Laurel
- Ballard, Doug
- Ballard, Richard and Jeri
- Bennett, Dennis
- Birger, Dick
- Blome, George
- Breuklander, Steve
- Brown, Greg
- Burge, Russell
- Carter, Wayne
- Christiansen, Lou
- Churchill, Dean
- Colburn, Dean
- Cook, Georgia
- Cornelius, Bob
- Crawford, Mary
- Damrow, Roger
- Davenport, John
- Davis, John
- Ducey, Jim
- Ellis, Bob
- Fields, Robert
- Fishell, Ralph
- Gallino, Orville
- Gass, Bob
- Geiger, Steve
- Graham, Doug
- Grabher, Bob
- Graham, Twyla
- Graves, Leroy
- Grooms, Jerry
- Gudden, Andrew
- Gunnty, Kent
- Hanna, Jeff
- Hartman, Darrel
- Hellmund, Paul Cawood
- Henry, Dale
- Higgins, Tom
- Hoehne, Paul
- Hollenbeck, Rex
- Hunter, Carolyn
- Huscher, Nora
- Isom, Stephen
- Jarvi, Guy
- Jeffers, Dick
- Jenson, Ron
- Kasselder, Charles
- Kerr, Steve
- Kramer, Kaye
- Kuhre, Beryl
- Kutilek, William R.
- Lee, Jim
- Lord, Elver
- Mathey, Kevin
- Mecure, Randy
- Mecure, Rich
- Metschke, Corey
- McPeak, Janet
- Muller, Gretchen
- Murphy, John
- Olson, Ole
- Perrett, Brian
- Peterson, Kent
- Pierce, Roger
- Reece, Bud
- Reimann, K.F.
- Robbins, Jr., Dick
- Roberts, Jerome
- Rogers, Ron
- Rosfeld, Otto
- Rutten, Ben
- Ryschon, Jerry
- Scheffler, Delbert
- Schneider, Julie
- Schroeder, Mr. & Mrs. Don
- Segar, John
- Sharp, Wayne
- Sherwood, Greg
- Simmons, Carl
- Smith, Neil
- Soper, Don
- Sterry, Rich
- Stoeger, Doug
- Stokes, Alan
- Stroup, William
- Stump, Dr. Bill
- Suhr, Jenny
- Tegtmeier, Jim
- Thortall, Vic
- Torgerson
- Turner, Bill
- VanDerPloegh, Marvin
- Vosicky, George
- Walkling, Al
- Waln, Bill
- Walton, Judy
- Wescott, Mike
- Witthuhn, John
- Young, Cork and Mary
- Young, Mike

Ft. Niobrara/Valentine National Wildlife Refuge Complex  
HC 14, Box 67  
Valentine, NE 69201  
402/376 3789  
r6rw\_ftn@fws.gov

U. S. Fish and Wildlife Service  
<http://www.fws.gov>

For Refuge Information  
1 800/344 WILD

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